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DIESEL RAILWAY TRACTION SUPPLEMENT

The November issue of THE RAILWAY GAZETTE *Supplement, illustrating and describing developments in Diesel Railway Traction, will be ready on November 2, price 1s.*

NOTICE TO SUBSCRIBERS

Consequent on further paper rationing, new subscribers cannot be accepted until further notice. Any applications will be put on a waiting list which will be dealt with in rotation in replacement of subscribers who do not renew their subscriptions

POSTING "THE RAILWAY GAZETTE" OVERSEAS

We would remind our readers that there are many overseas countries to which it is not permissible for private individuals to send printed journals and newspapers. THE RAILWAY GAZETTE *possesses the necessary permit and facilities for such dispatch.*

We would emphasise that copies addressed to places in Great Britain should not be re-directed to places overseas

REDUCTION IN SIZE OF PAGE

To economise in paper our readers will observe a slight reduction in the size of THE RAILWAY GAZETTE *in that the size of the page has been reduced from 9 in. × 12 in. to 8½ in. × 11½ in. The type area of the page remains the same, namely, 7 in. × 10 in., but the surrounding margins have been reduced. This of course detracts from the appearance of the paper, but is one of the exigencies of the war*

TO CALLERS AND TELEPHONERS

Until further notice our office hours are:
Mondays to Fridays 9.30 a.m. till 5 p.m.
The office is closed on Saturdays

ANSWERS TO ENQUIRIES

By reason of staff shortage due to enlistment, we regret that it is no longer possible for us to answer enquiries involving research, or to supply dates when articles appeared in back numbers, either by telephone or by letter

ERRORS, PAPER, AND PRINTING

Owing to shortage of staff and altered printing arrangements due to the war, and less time available for proof reading, we ask our readers' indulgence for typographical and other errors they may observe from time to time, also for poorer paper and printing compared with pre-war standards

First Class Travel with Third Class Tickets

THE vexed question of travelling in first class compartments by holders of third class tickets recently has again assumed prominence. Quite apart from those who seem to consider it an assertion of their democratic principles to endeavour to obtain a higher class accommodation than that for which they have paid, there would seem to be a fair amount of genuine misunderstanding of the position. A railway police inspector, for instance, is reported to have stated during the hearing of a case in court that instructions had been given by the railways that no person was to travel first class with a third class ticket, whatever the circumstances. This statement received wide publicity and was no doubt responsible for questions which were asked the Parliamentary Secretary to the Ministry of War Transport in the House of Commons on the subject. Mr. Noel-Baker showed that there had been no recent change in the conditions which apply to first class travel. He pointed out that the instructions issued to railway staff are that, when the third class accommodation on a train is seriously overcrowded, third class passengers may be allowed to occupy first class seats without extra charge, but that the decision as to what constitutes "serious overcrowding" must be left to the competent railway official charged with administering the instructions, and then it is necessary to have some regard to the requirements of passengers holding first class tickets who may join the train later in its journey. He added that he thought that the reasons in favour of first class accommodation retention still held good, and added quite clearly that the third class passenger had no prerogative right to a first class seat except with the permission of a competent official. There is still a large number who agitate for the total abolition of first class travel throughout the railway system, although it is difficult to see what benefit would accrue to any of the parties. It can hardly be argued that the carrying capacity of the already fully-loaded trains would be increased.

Advertised Train Times

Some divergence of opinion appears to exist between British railways as to whether or not the train times advertised in public timebooks and on station timesheets should correspond exactly with those in the railway company's working timetables. On the Southern Railway, more especially on the Western Division main line, it is a general practice to advertise departure from intermediate stops a minute or two in advance of the working times, with the proviso that if the train is ready for departure at its advertised time, it shall be started without waiting for its working time. The idea is doubtless to get the travelling public to the stations in ample time, and thereby to increase the chances of getting trains away on schedule; the weakness of the arrangement is that it does not apply to the most important stations, such as Waterloo and Exeter, and that confusion may arise from having differing schedules for the same train. On the L.M.S.R. differences in schedule between advertised and working times are usually confined to junctions, in order officially to sever connections which would be advertised as such if the actual working times figured on the station sheets. Such severance is doubtless justified if the advertising of such a connection would throw an undue strain on the seating accommodation of the express making it, or if the connection were liable to be held for considerable periods waiting the arrival of the express, or if the tightness of the connecting times would cause the connection to be late away. However, all such points could be guarded against if a note were inserted in the timetable that connection is not guaranteed between such-and-such trains. The L.N.E.R. and G.W.R. public and working times correspond, and in all the circumstances this is perhaps the most satisfactory plan, provided that every effort is made to ensure that these times are duly observed.

India's Industrial Potential

The effect of the war on the industries of India has already become apparent and there can be no doubt that ultimately the changes which it will bring about will be very far reaching. In the first year of the conflict India executed war orders to a total of £62½ million; by the end of the second year they were valued at £123 million, and as at the end of July last they amounted to £273 million. They are now being placed at the rate of nearly £15 million a month. One of the most significant results of the present situation in India is that increasing equipment and intensive training are resulting in a new body of technicians, steel workers, machine tool workers, munition workers, and engineers of all kinds. Equipment has been flowing, as far as war conditions and the needs of other manufacturing areas permit, from the United Kingdom and the United States. India has undertaken the manufacture of alloy steels; the manufacture of ferro-silicon has been established in one Indian factory

and at least half India's requirements are expected to be met from this source. Production of aluminium in India will begin shortly on a large scale. At the outbreak of war, about 600 trade workshops were known to be available. The Director-General of Munitions Production is now using 1,500 engineering workshops—840 for general engineering items, over 300 for small tools, and 345 (in addition to 23 railway workshops) for munitions components.

Overseas Railway Traffics

Two of the principal British-owned Argentine railways show decreases in traffics for the 15th and 16th weeks of the current financial year, namely of £8,760 on the Buenos Ayres Western and of £2,748 net on the Central Argentine. In the two corresponding weeks a year ago, however, the Buenos Ayres Western had an increase of £27,540, and the Central Argentine one of £80,379 over the previous year. The aggregate increases for the first 16 weeks of the financial year 1941-42 were :—Central Argentine £414,261, Buenos Ayres Great Southern £214,680, Buenos Ayres Western £175,740, Buenos Ayres & Pacific £146,760, Entre Rios £55,956, and Argentine North Eastern £26,202. Amongst Brazilian railways the Great Western shows an improvement of £51,800 for the first 42 weeks of 1942, and the corresponding advance on the Leopoldina is £167,702.

	No. of week	Weekly traffics	Inc. or decrease	Aggregate traffic	Inc. or decrease
		£	£	£	£
Buenos Ayres & Pacific* ...	16th	87,000	+12,000	1,355,340	+133,140
Buenos Ayres Great Southern*	16th	150,360	+29,460	2,052,240	+55,920
Buenos Ayres Western* ...	16th	52,200	−2,520	774,600	−720
Central Argentine*	16th	119,538	−8,244	1,931,157	+175,185
Canadian Pacific	41st	1,043,600	+73,400	39,454,200	+5,962,800

* Pesos converted at 16⅔ to the £

United of Havana receipts in the 16th week of the current financial year showed an increase of £17,225, and the aggregate traffic to date amounts to £628,470, an improvement of £322,739.

Boilers—Past and Present

"Boilers—Past and Present" was the title of the presidential address, delivered at the general meeting of the Institution of Mechanical Engineers held on Friday, October 23, by Colonel S. J. Thompson, D.S.O., M.I.Mech.E. He followed the customary presidential practice in selecting a subject in connection with which his long experience entitles him to be regarded as an acknowledged authority. By bringing together in the same address matters concerning the history as well as the development of boiler design and construction the interest of his hearers and those who although unable to be present will subsequently peruse its contents must be greatly stimulated. The survey was mainly, indeed almost entirely, devoted to stationary and marine boiler practice and little was said concerning that other and very important aspect of the general subject—the locomotive boiler. This is understandable for several reasons: there are limits to the length of a presidential address; presidents of the "Mechanicals" and the "Civils" usually confine their presidential addresses to some branch of engineering to which they have devoted their professional careers; and the locomotive boiler was dealt with in Mr. Stanier's presidential address last year. Railways, of course, are large users of boilers of other than the locomotive type but the design and construction of such is in the main, if not entirely, left to the firms who manufacture and supply them. Nevertheless, railway mechanical engineers, in common with others concerned in the use and upkeep of steam generating plant, will find in the address much of interest, and will consider it a worthy addition to the literature of the institution, and a most useful contribution to records dealing with the evolution of the unit upon which reliance must initially be placed so long as steam is employed as a source of power.

Feminisation at Chiswick

The man-power position made it necessary some little time ago to employ women on semi-skilled jobs in the Chiswick works of London Transport which were previously done only by men. Men engaged for these jobs in peacetime usually had some slight knowledge of engineering matters, but the women as a rule had come from entirely different occupations, and some form of instruction was, therefore, essential before they could be used. There are two ways of training newcomers. One is by placing him or her to assist a man already doing the job, leaving the newcomer gradually to absorb the knowledge by experience, and by instruction from the old hand. The other way is to train the new entrants in classes, and not to transfer them to the shops until they are proficient in their new duties. In the case of men of the standard going to London Transport in peacetime, the first method was satisfactory, and was always employed, but in the case of women it has been necessary to devise new methods, and for the more intricate jobs mainly on the engineering side London Transport has adopted a combination of the two methods. The recruits, all of whom begin work as labourers, are selected for training for the more difficult regular semi-skilled tasks, such as stripping and assembling of vehicles, cleaning of parts, drilling, fettling work in the foundry, and press operating. They are then attached to classes, as described at page 425, for a fortnight, after which the women are placed in the shops, where at first they work under the supervision and instruction of the regular man whom they are going to release for more important work. On the average, women qualify for their full semi-skilled rate in three months from entering the preliminary class. For certain less complicated jobs, usually of a repetition type, the preliminary class was found to be unnecessary, and these women were given only "safety first" instruction before being placed to learn their job in the production sections. In such cases this gave a quicker result, but it was found that the women so trained were not so adaptable to variations in work as those who had received the more general fundamental training. Chiswick Works, which before the war employed none but men, now has 144 women labourers and 481 women on semi-skilled jobs.

Pullman Sleepers to Continue

Rumours that have been circulating in the United States, to the effect that the Pullman Company might after the war abandon its sleeping car operation, with a view to concentration only on the constructional side of its business, have received an emphatic contradiction from Mr. David A. Crawford, President of Pullman Inc. He points out that his company, although with some 3,000 cars fewer in actual service than in the years 1925 to 1929, is responsible for more passenger miles in its cars in 1942, due to the more intensive use made possible by higher speeds and to better organisation. During the past ten years, despite the reduction of business during the depression period, Pullman invested close on 80 million dollars in its sleeping and parlour car business, and even in the first six months of 1942, despite difficult war conditions, it has succeeded in adding to its fleet 157 new lightweight cars of the latest type, at a cost of $12,500,000. Such expenditures are a clear proof that, although the working of sleeping cars is not the more profitable of the two main divisions of Pullman activity in North America, there is no intention whatever of liquidating this side of the business. Mr. Crawford further declared that "Every research facility of the Pullman companies will be utilised in meeting post-war competition from aircraft, automobile, and other media of travel." The company is also following the lead of various American railways in future in selling all the seating space in club and lounge cars, in order to meet the constantly growing demand for accommodation in the trains.

Oiling Fishplates

The practice of applying oil from time to time to the bearing surfaces of fishplates arose from the realisation that a certain freedom of movement is necessary between the two adjacent rail-ends and the plates, to allow the necessary movement of the rails that arises by expansion or contraction with changes of temperature. It is now realised, moreover, that further advantages are derivable from regular attention to fishplate oiling. It tends to keep the fishbolts in good condition by sealing the thread against the seepage of water, which may cause the nut to "freeze" to the bolt, and make later adjustment difficult if not impossible. In locations where corrosion is severe, as in tunnels, the liberal application of oil with an asphaltic base not only retards corrosion of the fishplates, but tends to prevent the development of corrosion fatigue cracks, due to the combination of corrosive conditions with the exceptional stresses always sustained at the joint, and which may ultimately result in the failure of the rail. Such is the value set on fishplate oiling in the United States that track-oiling machines have been devised to carry out the work systematically at minimum cost. A memorandum on the subject communicated recently by a railway engineer to our American contemporary *Railway Engineering & Maintenance* gave the cost as $4 to $5 a mile, acording to the price of oil and the traffic conditions, with standard American 39 ft. rails; another authority quoted 3 cents for each pair of joints, which works out at just over $4 a mile. The latter gave it as his opinion that the late spring and late autumn are the most suitable time for carrying out the work, as preceding the principal temperature changes in the course of the year.

A Short Cut to Abandonment

In its search for steel rails and fastenings the War Production Board of the United States is taking the law into its own hands, if necessary short-circuiting the Interstate Commerce Commission and overriding all lesser authorities. As a result, the abandonment of unremunerative lines is proceeding at a greatly accelerated pace. In July last the I.C.C. authorised the Chicago &

North Western RR. to abandon 102 miles of line between Hastings, Nebraska, and Linwood, and the W.P.B. promptly commandeered the materials, permitting delay only until various elevators along the line had been cleared of their grain. The Illinois Commerce Commission ruled in July that the C. & N.W. should not be permitted to close its 28 miles of line between Sycamore, Ill., and Caledonia, but the I.C.C. issued the necessary closing order, and the W.P.B. took the rails. The W.P.B. has since gone further, by requisitioning the rails and fastenings from the Illinois Central's 57-mile branch between Red Oak, Ill., and Dodgeville, Wis., and also from the 91 miles of the St. Louis—San Francisco line between Fayetteville, Ark., and Fort Gibson, Okla., before the applications of these railways for the abandonments concerned had even been considered by the Interstate Commerce Commission. The railwaymen's unions are now becoming seriously concerned at this direct and apparently unchallenged action of the War Production Board, on account of the staff that may thus be displaced, and have appointed a committee to go into the matter. They claim that the railways are being provided with a short cut to abandonments that they have sought for years, by thus taking advantage of the war situation, and that apart from a declaration of martial law the President's wartime powers are not adequate to justify suspension of the laws governing railway abandonment.

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A Farsighted Locomotive Designer

On more than one occasion since the war began we have referred to the very heavy loads which are handled as a matter of course by L.N.E.R. locomotives on present-day schedules, and it is to the remarkable foresight of the late Sir Nigel Gresley that the L.N.E.R. operating authorities owe their ability to handle them as single-headed trains, and, so far at least as the locomotive running itself is concerned, without loss of time. When, in 1922, the first Gresley Pacific—No. 1470, *Great Northern*—left Doncaster works, Sir Nigel announced that it was designed for the handling of 600-ton trains, and this at a time when 400 tons was a heavy express, and 500 tons an altogether abnormal load. With the second engine of the class, No. 1471, *Sir Frederick Banbury*, he promptly proved his claim by running a 20-coach special train from Kings Cross to Grantham and back on the schedule to which the Flying Scotsman was then being worked. Twenty years later, on a September evening in 1942, seven express trains, booked into Kings Cross from 5.55 to 7.26 p.m., all with one exception loaded to at least 20 vehicles and one to 21; the gross loads of the six, with a conservative estimate for the weight of passengers and luggage, ranged from 620 to 685 tons, and the seven between them brought into Kings Cross 132 bogie coaches (including five articulated tourist "twins") and two smaller vans, of a total weight estimated at 4,330 tons. By a remarkable coincidence the pioneer Pacific, now No. 4470, headed the first train of the series, a 660-tonner; the remainder were hauled by streamlined "A4" Pacifics, or by the extremely capable "V 2" 2-6-2 engines, which have been among the most valuable of all the legacies in design bequeathed by Gresley to the locomotive department of which he proved so distinguished a chief.

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Maximum Locomotive Mileage

The extent to which the study of locomotive efficiency is bearing fruit is well illustrated by what has happened on the New York Central System in the past fourteen years. In 1928 the older "K2" Pacifics were averaging about 200 miles a day; the "K3" 4-6-2s increased this to 270 miles; the "J1" 4-6-4 Hudsons, the first of which appeared in 1927, put the figure up to 360 miles a day; and the latest "J3" Hudsons are giving an average service of 450 miles a day. About the year 1920, the highest monthly mileage achieved by any individual locomotive was under 10,000, whereas the best "J3" 4-6-4 mileages are now round about 20,000 a month. It was largely the performance of the 255 4-6-4 engines that in no more than two years helped to raise the average mileage between heavy repairs for all classes and types of steam locomotive on the New York Central from 80,363 in 1937 to 110,213 in 1939. Out of 37 engines of this type which went into the shops for general overhaul during a recent year, 31 had exceeded 200,000 miles since the last previous heavy repairs, the average was 221,000 miles, and one had reached 276,761 miles. Roller bearings have made a substantial contribution to this greatly increased reliability; and close attention to servicing methods at sheds has helped in the daily increase in locomotive mileage. A creditable feature of these records is that the advent of every new and more powerful class has immediately established new reliability records, and not only this, but it has also suggested means whereby the performance of existing classes might be improved, so that their mileages have been increased at the same time.

The Diesel and the Steam Locomotive

MANY interesting papers have been read in America and elsewhere on the subject of diesel locomotives, and that which was presented recently before the Railway Club of Pittsburgh by Professor Louis E. Endsley is particularly worthy of mention. It traverses the already well-trodden path which leads to a comparison of the diesel and the steam locomotive, for both of which types an excellent case can be made out by their respective champions. Professor Endsley would certainly seem to be on the side of the diesel-electric locomotive, but he admitted at the outset that when comparing the cost of equal-powered locomotives of this kind and that of steam locomotives, the former involved an expenditure twice that of the latter, and the only way a saving can be achieved is to obtain a higher mileage from the diesel unit. A great many railway companies have increased the mileage of the diesel locomotive to over twice that of the corresponding steam-propelled vehicle, and the author mentioned that he had records of some oil locomotives averaging 25,000 miles a month. One of the primary claims made by Professor Endsley was that the diesel-electric locomotive can be run at higher speeds than can any form of steam locomotive of the reciprocating type because of the counterbalance blow on the rail at high speeds, and, speaking from the point of view of practice and experience in the U.S.A., he cited the lower fuel bills of the oil-engined locomotive, but added if there were too many such locomotives or a very widely increased adoption of the type in road vehicles, then the ratio might change. Comparative figures were given of the cost of 600 h.p. and 900 h.p. diesel-electric shunting locomotives and corresponding steam-engined units. The former, according to the figures cited by the author, uses an average of 5·6 gal. of fuel oil per hr., and the 900 h.p. 6·4 gal. At a cost of 5 cents per gal. for fuel oil the fuel cost for each diesel locomotive is between 28 cents and 35 cents per hr. Corresponding steam locomotives average between 600 and 1,200 lb. of coal an hr., so that even taking the price of coal at 1,200 lb. of coal an hr., so that with coal only $2 a ton, it is evident that the diesel locomotive fuel cost is very much lower.

The modern high-speed, high-powered steam locomotive is producing a horse-power at the wheels for 3 to 4 lb. of coal per h.p.-hr., and the diesel-electric locomotive is generating the same output at 0·5 to 0·6 lb. of fuel oil per h.p.-hr. In some cases the figure is less than 0·4 lb. with the electric transmission giving an efficiency of 82 per cent.; hence the total consumption of the high-speed diesel locomotive would be about 0·55 lb. of fuel per h.p.-hr. at the wheels. Further claims made by the author on behalf of the diesel locomotive included one that the type allows of a higher tractive effort than a steam locomotive, since all wheels are driven instead of only some of them as in the latter type. Here apparently he overlooked the fact that there are many types of steam locomotives in which all the wheels are coupled together and rank for driving purposes and adhesion, and that in many more only one out of five or six pairs of wheels take no part in the driving effort; it must also be taken into account that coupling rods play an important part in both cases, although in greater measure where the steam locomotive is concerned. The author has been associated with the development of both steam and diesel locomotives in America and may be accredited with possessing the necessary knowledge to deal with his subject in a fair and practical manner. We have not had an opportunity of reading a report of the discussion which followed the delivery of the paper and thus ascertaining the points made in favour of the steam locomotive. The fact does, however, remain that in the course of the discussions which have followed the reading of papers of a similar kind in this country and elsewhere, the case for the steam locomotive has been presented in a manner which has placed things in their proper perspective where this interesting and important subject is concerned, not the least among the points made being the question of fuel supplies.

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Passenger Train Services from 1918 to 1942

AS was indicated in an editorial note in the October 9 issue of THE RAILWAY GAZETTE, long-distance train services in Great Britain appear now to have settled down into a condition approaching permanency, and the time is therefore appropriate for a statistical review of the facilities now offered, as compared with those in the later stages of the 1914-1919 war. It is to the longer view taken in train service planning in the present war that this permanency is due. As pointed out previously, in this conflict there has been no attempt to continue slightly decelerated peacetime services until the latest possible moment, and then to make drastic timetable changes such as those which ushered in the year 1917; and apart from the closing months of 1939, when in anticipation of destructive bombing very severe cuts were made in the frequency and speed of British main-line

services but were found to have been unduly pessimistic, the timetables brought into operation early in 1940 have served their purpose well, and have continued to operate with but little material alteration during nearly three years of war. In February, 1941, the London & North Eastern and Great Western Railways withdrew a certain number of express trains, and the L.N.E.R. in addition all the semi-fast and most of the slow trains between Kings Cross and Doncaster, in order to free the main lines to the maximum possible degree for coal traffic, but whereas the majority of the withdrawn G.W.R. trains were reinstated later in that year, the L.N.E.R. cancellations for the most part remained permanent, and have since been added to by the withdrawal of such important expresses as the 12.45 and 1 p.m. from Kings Cross to Newcastle and Edinburgh, and the 10.45 a.m. and 1.20 p.m. from Newcastle and Edinburgh respectively to Kings Cross. On the L.M.S.R. and Southern Railways a change of some note has been the introduction of stops in main-line schedules at London outer suburban stations, on the L.M.S.R. at Watford by certain down expresses and almost all of those in the up direction, and on the Southern Railway at Woking by all trains without exception that were previously non-stop. These additional halts have slightly lengthened overall times; the L.N.E.R. has increased the length of station stops made by many trains, especially since the general withdrawal of restaurant cars, in order to give passengers some time to obtain refreshments, and the G.W.R. has eased the running times of a number of trains. With additional stops that have been inserted in schedules the general tendency has thus been to increase overall journey times, and this is apparent in the table.

In the February 23, 1940, December 27, 1940, and May 30, 1941 issues of THE RAILWAY GAZETTE previous versions of the accompanying table were given, and the information is now brought up to date. It shows the fastest and average journey times and frequency of service between London and ten important towns on each of the four main-line railways in October, 1918 (the last month before the armistice of the 1914-1919 war); October, 1938 (the winter service operating before the present war); October, 1939 (the first drastically reduced service of the present war); February, 1940 (the maximum restoration of the present war); and October, 1942. Relatively, the Southern Railway has made the least changes of any from its peacetime standards except in the considerable reductions in frequency of the short distance coastal services. All its fastest and average journey times are less than those of the war year 1918, and in some cases very materially so; Portsmouth, for example, has 35 as compared with 24 daily trains, averaging 1 hr. 55 min. as compared with 2 hr. 53 min. For the first time since the opening of the Westbury route to the west, average times are less, and there is a more frequent service between London and Exeter by the S.R. than by the G.W.R., though the time difference is partly explained by the number of G.W.R. trains operating *via* Bristol, which is by 22¼ miles the longer of the two routes. On the L.N.E.R. it is the services over the Great Central main line that have suffered the most as compared with the 1914-1919 war, and fastest and average journey times between London and both Nottingham and Sheffield are thus badly affected (fastest times have gone up by 62 and 58 min., and average times by 39 and 36 min. respectively); Hull also is worse off than in the last war. On the L.M.S.R. the most substantial decelerations have been on the Midland Division; to and from Leicester, Nottingham, and Leeds average times are all now slightly longer than in 1918. As compared with the peacetime services of the winter of 1938-1939, the average L.M.S.R. journey is 37 per cent. slower to and from stations on the Midland Division, 29 per cent. Western Division, and 12 per cent. to and from Scotland—a general average of 27 per cent. The L.N.E.R. increase works out at 27 per cent. to and from stations in England and 19 per cent. to and from Scotland, a general average of 24½ per cent. As compared with this the G.W.R. average works out at 24 per cent., and the Southern at 8½ per cent. Against this may be set the fact that the L.N.E.R. reduction in frequency has been the most substantial, averaging 30½ per cent., as compared with 30 per cent. on the S.R., 29 per cent. on the G.W.R., and only 23½ per cent. on the L.M.S.R. These are, of course, only rough approximations calculated from the table, but they give some general idea of what has taken place. In general, therefore, we have more and faster trains operating in 1942 than in 1918, and as regards relative comfort, few would be prepared to dispute that we are considerably better off, for which railway managements are entitled to congratulation.

FASTEST AND AVERAGE TIMES AND FREQUENCY OF SERVICE BETWEEN LONDON AND VARIOUS PROVINCIAL CENTRES IN 1918, 1938, 1939, 1940, and 1942

London and :—	Distance	Fastest times					No. of trains daily					Average times				
		Oct., 1918	Oct., 1938	Oct., 1939	Feb., 1940	Oct., 1942	Oct., 1918	Oct., 1938	Oct., 1939	Feb., 1940	Oct., 1942	Oct., 1918	Oct., 1938	Oct., 1939	Feb., 1940	Oct., 1942
L.M.S.R.	Miles	h. m.	h. m.	h. m.	h. m.	h. m.						h. m.	h. m.	h. m.	h. m.	h. m.
Leicester	99·1	2 15	1 39	2 31	2 10	2 10	18	30	16	18	20	2 33	1 48	2 46	2 35	2 41
Birmingham	112·9	2 40	1 55	2 41	2 24	2 24	11	20	15	18	16	2 53	2 05	3 10	2 51	2 52
Nottingham	123·5	2 55	2 03	3 06	2 45	2 40	12	21	12	15	15	3 07	2 25	3 31	3 14	3 11
Sheffield	158·5	4 01	2 56	4 25	3 49	3 47	12	20	10	14	15	4 24	3 12	4 44	4 20	4 19
Manchester (*a*)	188·5	4 35	3 15	4 32	3 50	4 04	16	22	14	18	18	5 10	3 43	4 52	4 34	4 37
Liverpool	193·7	4 40	3 15	4 40	4 10	4 15	12	14	12	12	12	5 03	3 39	5 02	4 34	4 31
Leeds	196·0	4 47	3 48	5 35	4 44	5 06	12	16	8	12	12	5 25	4 06	6 03	5 27	5 28
Glasgow	401·4	9 30	6 30*	9 35	8 45	8 50	6	12	6	6	9	10 20	8 06	10 04	8 53	9 06
Perth	450·4	10 10	8 41	11 12	10 05	10 06	6	8	4	4	6	11 19	9 30	11 31	10 25	10 52
Inverness	568·4	15 55	13 00	16 14	14 22	14 40	3	4	2	2	3	16 28	14 30	16 26	14 56	15 46
L.N.E.R.																
Cambridge (*e*)	55·7	1 19	1 05	1 33	1 26	1 23	15	40	16	24	24	1 34	1 20	1 43	1 42	1 43
Peterborough	76·4	1 38	1 16	1 42	1 32	1 34	22	30	18	27	24	1 50	1 30	1 50	1 36	1 38
Norwich	115·0	2 52	2 10	3 18	2 50	2 38	14	18	12	14	12	3 42	2 50	3 26	3 20	3 13
Nottingham (*b*)	126·5	2 27	2 16	3 17	3 07	3 18	16	18	12	17	16	2 57	2 38	3 36	3 22	3 36
Sheffield (*b*)	164·7	3 22	3 00	4 27	3 50	4 20	14	21	14	15	15	4 02	3 29	5 12	4 20	4 38
Leeds	185·8	4 32	2 43*	4 28	4 20	4 19	10	18	8	12	12	4 52	3 37	5 00	4 39	4 50
Hull	196·9	4 55	3 30	5 20	4 35	4 42	10	14	5	14	12	5 29	4 06	5 32	5 06	5 33
Newcastle	268·3	5 55	3 57*	6 31	5 39	5 50	12	21	12	13	14	6 40	5 15	6 56	6 04	6 30
Edinburgh	392·7	9 40	6 00*	9 40	8 25	8 35	8	15	8	9	7	9 52	7 46	10 08	8 57	9 06
Aberdeen	523·2	13 30	9 45†	13 45	12 21	12 35	5	12	5	8	7	15 04	11 53	14 52	13 00	13 49
G.W.R.																
Oxford	63·5	1 18	1 00	1 28	1 25	1 25	14	26	20	26	26	1 30	1 20	1 39	1 42	1 46
Birmingham	110·6	2 30	2 00	2 33	2 28	2 29	10	14	8	11	10	2 46	2 05	2 51	2 33	2 36
Bristol	118·3	2 15	1 45	2 35	2 30	2 30	16	20	14	18	18	2 45	2 15	2 58	2 51	3 04
Worcester	120·4	3 06	2 10	3 06	2 53	2 55	8	12	8	10	8	3 41	2 37	3 20	3 17	3 17
Cardiff	145·1	3 10	2 41	3 15	3 03	3 03	10	14	8	12	8	3 23	2 55	3 23	3 16	3 27
Weymouth	168·8	3 45	3 07	4 08	4 08	4 20	6	12	9	9	9	4 22	3 59	4 51	4 43	4 59
Exeter	173·5	3 30	2 50	4 30	3 30	3 32	15	19	11	11	10	4 31	3 42	4 52	4 05	4 22
Swansea	190·9	4 35	3 57	4 40	4 30	4 35	10	14	9	12	8	5 07	4 08	4 57	4 40	5 00
Plymouth (North Road)	225·5	5 00	4 05	5 45	4 51	4 55	8	12	9	10	9	5 39	4 44	6 26	5 13	5 51
Penzance	305·0	7 55	6 30	8 35	7 30	7 50	6	9	6	6	6	9 11	7 18	9 35	8 17	8 48
S.R.																
Brighton	50·9	1 15	1 00	1 00	1 00	1 00	34	100	46	53	45	1 30	1 09	1 11	1 11	1 11
Hastings (*c*)	62·4	1 48	1 32	1 38	1 38	1 42	25	50	22	22	27	2 27	1 52	1 59	1 59	1 59
Portsmouth (*d*)	73·6	2 12	1 30	1 37	1 37	1 37	24	45	40	40	35	2 53	1 38	1 58	1 57	1 55
Margate	73·9	2 04	1 30	1 38	1 38	1 53	18	28	20	21	19	2 34	2 03	2 20	2 15	2 20
Dover	77·3	2 27	1 32	1 52	1 55	1 58	17	32	22	22	24	2 46	2 06	2 19	2 11	2 14
Southampton	79·2	1 43	1 25	1 46	1 35	1 39	20	28	26	20	21	2 16	1 50	2 03	1 58	1 58
Salisbury	83·8	1 43	1 26	1 48	1 42	1 43	15	26	16	17	16	2 15	2 02	2 08	2 03	1 58
Bournemouth Central	107·9	2 39	1 56	2 30	2 15	2 20	12	26	17	18	18	2 52	2 33	3 04	2 58	2 51
Exeter	171·8	3 57	3 09	3 50	3 38	3 38	11	13	9	11	13	4 38	3 42	4 15	4 09	4 10
Plymouth (North Road)	230·9	5 55	4 43	6 06	5 52	5 47	8	12	7	9	9	6 32	5 45	6 22	6 17	6 21

(*a*) *Via* Western and Midland routes (*b*) *Via* G.N. and G.C. routes (*c*) *Via* Tonbridge and *via* Lewes (*d*) *Via* Guildford and *via* Horsham
(*e*) *Via* G.N. and G.E. routes * By streamline train † By streamline train between Edinburgh and London

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Private Ownership of Railway Wagons

Charles Roberts & Co. Ltd.,
Railway Wagon Works,
Horbury Junction,
Nr. Wakefield
October 19

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I have read with great interest the articles which have recently appeared in THE RAILWAY GAZETTE and I am sure the general public greatly appreciates the marvellous work which the railways are doing under war conditions, but one cannot help but feel, reading between the lines, that the information given is calculated to create the impression that because certain things can be done under war conditions, the same alleged advantages would be forthcoming under normal peace conditions.

As we have agreed on a political truce in this country during the war, I would ask any of your readers who may be interested in this subject of vital national importance to suspend their judgment until the time comes, when in the right place the other side of the picture can be presented.

Yours faithfully,
DUNCAN BAILEY
Managing Director

G.W.R. "Castle" Locomotives

London, N.2
October 20

TO THE EDITOR OF THE RAILWAY GAZETTE.

SIR,—Whilst agreeing with your correspondent, Mr. Chas. S. Lake, that the "Castle" engine of the G.W.R. is a remarkably efficient machine, it should, I think, have been pointed out by him in making comparisons with the Southern "Lord Nelson" and the L.M.S.R. "Royal Scot" classes that the difference in weight in favour of the "Castle" engines is due to the lighter tenders used.

I have not the actual figures by me, but speaking from memory the tenders fitted to the engines on the other railways referred to, weigh at least 10 tons more when fully loaded than those of the G.W.R. locomotives.

Then also the fact that the "Castles" carry a higher boiler pressure than the "Lord Nelson's" is naturally reflected in computing the tractive effort. I suggest that unless these points are taken into account, comparisons of the kind referred to rather miss the point.

Yours truly,
J. F. SMITHSON

Railway Services and Charges

United University Club,
Pall Mall East, S.W.1
October 24

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Mr. Charlewood thinks it is "hardly fair" to criticise the deceleration on the Waverley route during the last sixty years. But surely this is a good example of the present tendency to scrap alternative facilities and compel the public, whether it likes it or not, to use only some one route selected by the railway company. Formerly the Midland provided an excellent competitive service by day and by night to Scotland; now its status has been lowered to that of a second-rate line. And if the L.M.S.R. was determined that Euston should be its only gateway to Scotland it should at least have taken care that the service from Euston should be above reproach. Why has the summer train at 11.30 a.m. never been restored? It was the only train from Euston by which passengers from places south of London have ever been able to reach destinations in Scotland without either an inconveniently early start or an inconveniently late arrival. And why have the night trains not been made as good as they were before the Preston accident, nearly half a century ago? The public has its own opinion of the value of the service provided; and just to give a single instance of what that opinion may lead to I may say that some years ago an elderly lady of my acquaintance living at Oxted in Surrey started from Oxted in her car one summer morning and reached Dunkeld that night, without using any railway at all. I have read that in North America, before the outbreak of the present war, as much as 85 per cent. of the movement of passengers was by private car, and of the remaining 15 per cent. the share of the railways amounted to no more than a third; with our narrow English roads it will be very unfortunate if we are to come to such a state of things in this country.

All cheap tickets on British railways have just been withdrawn. A similar step was taken on January 1, 1917, in the middle of the last war, and the official announcement then issued ended with the sentence "this is purely a war measure and the old fares will be restored after the war," see *The Times*, December 21, 1916, p. 9. The promise contained in those last words was broken and the old penny-a-mile fares were never restored; but the mere fact that the promise was made shows that the Government at that date felt that its action required justification and that cheap and efficient railway transport was an asset not to be lightly destroyed. This time, it is to be noted, there is no promise that we shall ever see cheap fares again.

Yours faithfully,
W. B. THOMPSON

The Port of Stratford-on-Avon

Essex House,
Essex Street, Strand,
London, W.C.2
October 20

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—In view of the peace and quiet of the pleasant gardens that today mark the junction of the Avon, the Stratford-on-Avon Canal, and the Stratford & Moreton Railway, it is interesting to note the ambitions of bustling traffic that were bruited abroad concerning it n 1830. In the History of Warwickshire by Wm. West (Birmingham, 1830), we read at page 532 concerning Stratford-on-Avon (or may I call it Stratford-on-Shakespeare) :—

"The Avon being navigable to the Severn and in such constant and direct communication with the new and thriving port of Gloucester, it has opened such facilities, and such a source for the increase of trade, in this town, which many respectable persons had selected as a place of retirement, that each succeeding year is producing an extraordinary change. The river has been cleared, wharfs laid out, warehouses, upon a most extensive scale erected, and railroads laid down by the first engineers in the kingdom, branch in every direction. The attention and talent displayed by Mr. Kershaw, of Lapworth, in this department, is praiseworthy. The canal also, lately completed, opens a communication with the north. Thus Stratford-upon-Avon is likely to become a busy and thriving little port; combining not only all the advantages of canal and land conveyance, but also with the ocean, both with moderate-sized sailing vessels, and with the steam-boats, in connection with the south of Ireland, Bristol, Gloucester, etc., etc. . . . A railway is likewise finished from this place to Morton-in-Marsh. . . . There is likewise at this time, considerable quantities of building-stone, of excellent quality, brought from Morton and its neighbourhood, by means of the rail-road. . . . At the present time, the enterprising proprietors of the large stack of corn mills, near this town, are launching a steam-vessel, for the purpose of bringing their corn from Gloucester up the Avon."

Yours faithfully,
KENNETH BROWN

Transport Maps

81, Morland Road, Croydon,
Surrey
October 21

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Not a week goes by without many references being made in THE RAILWAY GAZETTE to the various American railroads.

I have often thought that it would be a useful guide to readers if you could, in due course, produce a map showing the areas served by these railroads, so that their general routes could be followed in conjunction with the references made to them.

In this connection, I am reminded of the two very comprehensive maps which you recently published on similar lines for the bus companies in England, Wales, and Scotland.

Yours sincerely,
R. B. HOUNSFIELD

[We naturally welcome our correspondent's appreciation of our maps. There are particular difficulties in regard to the United States by reason of the vast extent of the territory, the great length of railway mileage, and the complexities of the systems, which frequently parallel one another and do not serve self-contained territories. Nevertheless, we hope to produce a skeleton map of the American railroads, as we think it would prove of value to many of our readers, but its appearance will be delayed by the wartime shortage of drawing office staff and severe restrictions on paper consumption.—ED. *R.G.*]

The Scrap Heap

"The Times" goes "All American"

The King and Queen arrived on the platform five minutes before Mrs. Roosevelt's train was due, the King in the uniform of Marshal of the Royal Air Force, and the Queen, looking fully recovered from her illness, in a black velvet coat with halo hat of the same material. They were received by Sir Charles Hambro, *President* of the Great Western Railway.—*Extract from "The Times" account of Mrs. Roosevelt's arrival in Paddington Station on October 23.*

* * *

An article which appears in a recent issue of *The Saturday Evening Post* invites its readers to broaden their knowledge of "Americanese" by dropping into the "grease trough" (lunch counter) in any railway yard, and listening to the conversation. A typical one, between a waitress and a brakeman, is given as follows; the "translation" appears afterwards in brackets :—

"Dropped your butterfly ?"

"Not yet. Let go three."

"In tonight ? I thought you got out on the local."

"An oldhead bumped me off the peddler's swing. But I'm first out on the slowboard."

"Why don't you bid on the break-up job ? It's advertised. Joe Smith just got hit with sixty Brownies. He had 'em all over the ground last night. The snakes hung up a green fruit two hours while the hook cleared the lead. I thought the ringmaster'd have a stroke !"

["Have you given your order ?"—the term "butterfly" originated in the practice of dropping written messages from passing trains.

"Not yet. Three pancakes please."—To "let go three" really means to cut off three wagons.

"Are you off duty tonight ? I thought you were out on the local."

"A senior man claimed my job on the local goods. But I'm first on the extra list."

"Why not try for the shunting job posted on the bulletin board ? Joe Smith has just got his discharge (having received his sixtieth demerit, which, under the Brown system of discipline, automatically discharges a man). He wrecked his train last night. The shunters delayed a train carrying green citrus fruit for two hours while the crane cleared the lead track. I thought the yardmaster would have a stroke !"]

* * *

L.M.S.R. Prisoners of War Comforts

L.M.S.R. employees who are prisoners of war now total 470, and each receives 500 cigarettes or 1 lb. of tobacco every month if they desire it, through the L.M.S.R. Prisoners of War Comforts Fund. Also, in the majority of cases, authority has been obtained from the next of kin for permission to send quarterly parcels of clothing and other comforts. Special articles already asked for, and sent, include boxing gloves, ukeleles, balmoral bonnets, harmonicas, and books of all kinds. The Fund has been in operation since the end of July, and is financed by a special contribution from the company, and by authorised deductions of 1d. a week from the salary and wages packets of the staff. This is additional to the regular subscriptions L.M.S.R. employees are making to the Red Cross & St. John Penny-a-week Fund for Prisoners of War.

* * *

First Class Travel

Instructions have been given by the railway companies that nobody is to be allowed to travel first class with a third class ticket, whatever the circumstances, and special examiners have been put on duty to enforce the instruction and to demand excess fare from anyone found breaking it. This was stated by Inspector Matthews, of the L.M.S.R. Police, at Salford recently. Mr. R. Almack, prosecuting for the railway, said : "What is taking place now is that if there is anything of a crowd at all everyone makes a rush for the first class compartments and only when these are full do the third class begin to fill."

A week's adjournment was granted to a man who admitted travelling first class on a workman's ticket from Patricroft to Manchester after having been asked to leave the compartment by the guard. He claimed that newspaper and radio statements showed he was entitled to do so if no third class seats were available. He denied that there were third class seats available on this occasion. He could bring witnesses to prove that workers had to stand night after night in trains which had almost empty first-class carriages. The matter had been before his works committee repeatedly, and he had now asked the Amalgamated Engineering Union to take this particular case up.—*From "The Manchester Guardian."*

(*See editorial note, page* 409, *and Questions in Parliament, page* 427)

Rejuvenating obsolescent locomotives—South African method

An old South African Railways & Harbours 4-8-0 Locomotive No. 1020 which was built by Dübs & Company in 1898

Photo] [*J. F. Pearse*

From "The Evening News."

"This Passimeter"

The platforms at Guildford railway station are served by two approaches—the main entrance, and by an entrance in a side road which leads to a long footbridge over the tracks. The latter entrance has been recently adorned with the following announcement : "This passimeter is closed at 8 p.m. on weekdays and all day on Sundays." What on earth is a "passimeter" ? The Concise Oxford Dictionary—the only one I have to hand—has never heard of it. I am prompted to ask the officials of the Southern Railway : "Is Your Jargon Really Necessary ?"—*Chas. H. Butler, in a letter to "The Times."*

On inquiry, we are informed by the Southern Railway that "passimeter" is the description properly applied to a turnstile which records the number of persons who pass through it ; at Guildford and certain other stations it is used for the horizontally-movable flap placed across the entrances to passageways. This definition was also given subsequently by Mr. Kenneth Brown in a letter to "*The Times.*"

* * *

"Sheer Delusion"

Many people believe that in a few years things will be as before, that those described as the privileged classes will still be as privileged as before, and that those accustomed to what is called a leisured existence will be able to revert to it again. I am quite sure that any such belief is a sheer delusion.—*Dr. Bell, Bishop of Chichester, as reported in "The Evening News."*

* * *

An intensive drive to cut down transit time has taken place on the G.W.R. In a recent four weeks which included August Bank Holiday, the average number of minutes late for all passengers and parcel trains was reduced almost by half. In spite of provision for Government traffic, the average late arrival for 100,000 booked trains in the four weeks was about 5 min. each train.

OVERSEAS RAILWAY AFFAIRS

(*From our correspondents*)

SOUTH AFRICA

Tourist Traffic and Hotels

The Board of Control of the Tourist Development Corporation, which was set up in 1938 for the purpose of encouraging the visits of tourists to Southern Africa, recently recommended to the Minister of Railways & Harbours that a committee should be appointed to investigate the hotel position in the Union of South Africa with a view to the resumption of tourist traffic after the war.

The Minister accepted the recommendation and a committee was formed to inquire into the existing hotel industry and its ability or otherwise to meet the needs of the public and the tourist industry; the practicability of a centralised control for the tourist-hotel industry; the desirability of establishing a control board for this purpose; the need for a national classification of tourist hotels and the basis on which this might be done; the need for controlling and making public hotel charges; any matters, other than those directly bearing upon licences or police control, affecting the tourist-hotel industry and its development on a scale commensurate with prospective tourist-traffic development.

CANADA

Peak Year Prospect for C.N.R.

The fact that the Canadian National Railways attained a total revenue for August of $34,419,000, a figure which not only rose $8,610,000 over last year, but which added nearly $8,000,000 to its cumulative gains this year over 1928 figure, has made it certain that 1942 will stand as a new peak year for gross earnings for the system. Up to the end of July, it was not indicated clearly whether the large revenues of the current year, steadily increasing, would be able to pass those of 1928, for in the final five months of that year a record wheat movement built up revenues far in excess, not only of any earnings up to that time, but of any earnings for the final five months up to the end of 1941. It is possible that this five-month total of 1928 may be higher than for the same period of this year, but, even so, the present lead of 1942 cannot be overcome. For the first eight months of 1942, total revenues amounted to $236,967,000. These compared with $189,015,000 for 1928, which figure was less than the 1929 eight-month total ($193,556,000). The current lead seems likely to be increased, although the last four months of 1928 brought in revenue of over $96,000,000. The total revenue in 1928 of $304,591,000 is shown in the published accounts of the C.N.R. In that and the two years following, the accounts of the subsidiary Central Vermont were not included, as they are to-day, so that possibly a fairer comparison for 1942 would be with a total for 1928 of $312,286,000.

UNITED STATES

The Fastest Trains in the World

Even before the war began the United States could claim to be operating the fastest railway schedules in the world, both with diesel-electric and steam power; and, as almost all the trains concerned are still running on unaltered schedules, the premier position now is assured even more emphatically. The fastest point-to-point booking is made by one of the Twin Cities Zephyr trains of the Chicago, Burlington & Quincy Railroad, which is booked from East Dubuque to Prairie du Chien, 54·6 miles, in 39 min., at a start-to-stop average of 84·0 m.p.h. Intermediately, the 23·95 miles from Cassville to Crawford are booked to be covered in 14 min., at a pass-to-pass average of 102·6 m.p.h., which is probably the only 100 m.p.h. schedule that has ever figured yet in a railway working timetable. All the timings of this train are extremely fast; it is the only one on the three competing routes to complete the journey between Chicago and St. Paul in 6 hr. (the other trains taking 6¼ hr.), and, as the Burlington route is 427 miles, the longest of the three, the overall average required is 71·2 m.p.h., which includes no fewer than seven intermediate stops. In the realm of steam propulsion the Chicago, Milwaukee, St. Paul & Pacific Railroad continues to hold the record with the morning eastbound Hiawatha, which is booked over the 78·3 miles from Sparta to Portage in 58 min., at an average speed of 81·0 m.p.h. from start to stop. The standard westbound Hiawatha timing on the Chicago-Milwaukee 75 min. run is 38 min. for the 57·6 miles from Tower A20 to Lake (96·6 m.p.h.), and 40 min in the opposite direction (86·4 m.p.h.).

Locomotives Instead of Freight Wagons

The Pennsylvania Railroad is another of the American companies which is seeking authority from the Interstate Commerce Commission to vary large orders for rolling stock, on account of the difficulty in obtaining delivery of freight wagons. (See also our October 23 issue, page 391.) Instead of orders to a total of $13,392,850 for 1,989 55-ton hopper wagons, 300 70-ton hopper wagons, 1,000 70-ton gondola wagons, 1,107 50-ton steel box wagons, and 50 cabooses, therefore the P.RR. seeks permission to order 49 2-10-4 steam locomotives, 5 "GG1" type electric locomotives, and a balance of 500 50-ton hopper wagons, 500 70-ton gondola cars, and 500 50-ton gondola wagons, to a total cost of $14,270,000. It will be recalled that the Southern Pacific already has obtained permission to substitute an order for 12 4-8-8-2 oil-burning articulated steam locomotives for an equivalent value in box wagons which have proved unobtainable. Among other railways, the Denver & Rio Grande Western has placed orders for 1,000 gondola cars, comprising 500 general-service, 450 50-ton tight-bottom, and 50 65-ft. mill-type wagons; and the Missouri Pacific Railroad has obtained release for 650 gondola wagons from the War Production Board.

Continued Freight-Traffic Increase

Statistics for April traffics show that once again all United States freight records were broken in that month, although it is a month with 30, and not 31, days. The total freight traffic conveyed was approximately 54 billion net ton-miles, as compared with 52 billion in March, and 51 billion in the previous October; the increase over April, 1929, the previous peak month, was 40 per cent. On the average during April, 1942, each freight locomotive travelled 101·5 miles, and each freight wagon 46·6 miles, every day; the average make-up of trains rose to 52·4 wagons, and the average weight of freight which was carried in the trains increased to 1,006 tons—both new records. Ton-miles a car a day mounted to a new "high" of 894, which beat every previous April figure by 60 per cent., and the record reached in October last by 5 per cent.

More Efficient Rolling-Stock Maintenance

The success attending the foregoing freight operation has arisen largely from the efficiency with which locomotive maintenance has been tackled. In April, the total number of U.S.A. freight locomotives in existence—21,915—was less than in January, 1941; but, whereas 5,094, or 23 per cent., were needing repairs in the latter month, in April, 1942, the number stopped for repairs was only 3,119, or 14 per cent. of the total, a new low record. On the other hand, in April of this year the number of locomotives stored in serviceable condition against emergencies had fallen to 688—a decline of 69 per cent. since April, 1940, and of 54 per cent. since April, 1941, and the smallest safety margin in the operating history of the country. Similarly, although the total stock of railway freight wagons rose by 101,000 from April, 1941, to April, 1942, the total in running condition rose by 136,000, due to a reduction in the number awaiting repairs from 5·9 to 3·6 per cent. of the total. It is a disturbing fact that, although the demands on the railways are increasing without respite, the delivery to them of new stock is rapidly decreasing, by reason of the absorption of raw materials for war purposes; and, if this process continues the railways inevitably must ultimately reach the limit of their capacity to handle increased traffic.

Graduate Booking Clerks

A reversion to a practice temporarily introduced in the war of 1914-19 is to be found in the addition by the Pennsylvania Railroad of 25 young women to its staff of information clerks and ticket sellers at the Pennsylvania Station in New York. College graduates have been selected exclusively, and they undergo a special course of preliminary training under the direction of the stationmaster. They are working in both the main line and Long Island portions of the station.

ARGENTINA

International Air Services

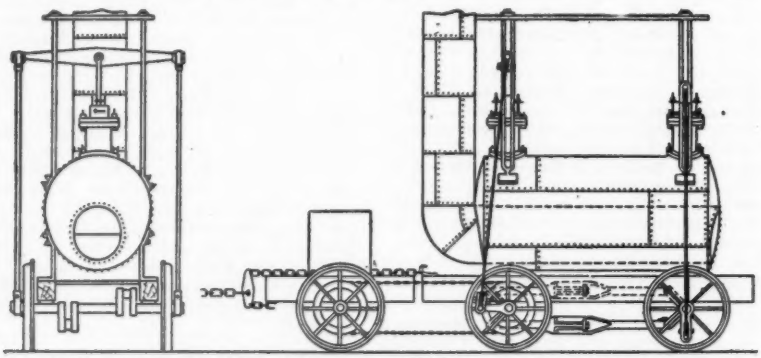
As from September 6, the Panagra Air Company placed an additional passenger and mail service in operation between Buenos Aires and the United States, *via* the Pacific coast. This extra service follows a new route linking Buenos Aires with Cordoba, Tucumán, and Salta (Argentina), and with Antofagasta (Chile), proceeding up the west coast, with stops at the principal cities *en route*. In addition to creating another air link with the United States, the new route provides a tri-weekly service between Buenos Aires and North Argentina *via* the existing so-called "diagonal" route, thus contributing to the development of commercial and tourist traffic between Salta and Antofagasta. The aeroplanes leave Buenos Aires on Wednesday, returning on the following Monday. The addition of this service to those already operated between Argentina and the U.S.A., *via* the Atlantic and Pacific coasts, by the Pan-American and Panagra companies will bring the number of international aeroplane departures from, and arrivals at, Buenos Aires every week to thirty-four.

Boilers—Past and Present

Colonel S. J. Thompson's presidential address to the Institution of Mechanical Engineers

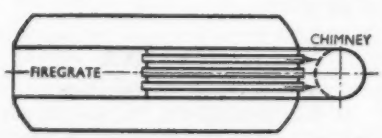
THE presidential address delivered by Colonel S. J. Thompson, D.S.O., M.I.Mech.E., to the Institution of Mechanical Engineers on October 23, had as its title "Boilers—Past and Present." It dealt, as its title suggested, with boiler design and construction from an historical as well as the more modern aspect and related almost entirely to stationary as apart from locomotive boiler practice.

In his opening the President called attention to the fact that he had been closely associated with that branch of engineering for over fifty years and that as a consequence the address became largely an account of boiler progress as he had seen it. It was, he pointed out, possible to give only a brief survey of so large a subject, and he therefore proposed first to cover the progress made in this country in shell-type boilers, and later the development of water-tube types, and finally to give a general summary of past and present achievements, and to touch on future possibilities.



Original boiler for George Stephenson's Killingworth locomotive (1815)

It was about 150 B.C. that Hero of Alexandria constructed an engine and boiler combined, which was considered to be the first workable design of steam turbine. Centuries later, under the supervision of Newcomen in 1712, a steam engine, with its boiler, was erected near Dudley Castle, and another at Griff Colliery, Nuneaton. Many varying designs of boilers followed, and in 1785 Watt introduced a horizontal wagon-type cast-iron boiler, with straight sides and bottom. This was later redesigned with curved sides and bottom, to withstand a higher pressure.



Reconstructed boiler for Killingworth locomotive

In 1800, Richard Trevithick introduced horizontal round-end boilers made of wrought iron, about 3-4 ft. dia. and up to 40 ft. long. It was stated that these boilers worked at pressures up to about 80 lb. a sq. in. The flues were so arranged that the flame and hot gases travelled underneath the boiler and back again. In 1804 Trevithick built a boiler 6 ft. 2 in. long, and 4 ft. 6 in. in dia. with an internal flue. This was the well-known Cornish boiler, and was of the general design still in use today. In 1814 George Stephenson built his first locomotive, which was set to work at Newcastle-upon-Tyne. The boiler was cylindrical, 9 ft. 10 in. long and 4 ft. in dia., with a working pressure 9½ lb. per sq. in. This engine ran for about forty years, and about half-way through its career the boiler was altered; part of the straight internal flue was cut off, and small tubes were substituted, thus providing a design which had persisted until today.

The earlier Lancashire boilers were made of iron and constructed of a large number of small plates, but as steel plates became available the construction changed, and the number of plates was reduced to a minimum. Lancashire boilers were today being built from 7 to 10 ft. dia. and 30 ft. long, with working pressures up to 250 lb. per sq. in.

Lancashire boilers still had a useful field, particularly where a large reserve of steam and water was desirable. Their comparative simplicity of design, ease of operation, and unexacting requirements for feed water were important features for small installations requiring relatively low steam pressures. Such boilers might be fitted with mechanical stokers, superheaters, and economisers, and would evaporate up to 12,000-15,000 lb. an hr. at an efficiency of 75-78 per cent.

Shell-type boilers were very reliable, and did not require repairs for many years, and with the addition of mechanical stokers, superheaters, and economisers they were now fairly efficient. They were, however, limited in evaporation and their pressures did not normally exceed 250-300 lb. per sq. in.

Water-Tube Boilers

The principle of the water-tube boiler was that of separation of the water into small sections so that each section could be exposed to the maximum amount of heat. The earliest known example of the principle dated back to the time when Pompeii was a flourishing city, that was, before A.D. 78.

Confronting the early boilermakers was the very great difficulty of obtaining tubes, but in 1803 Woolf invented a water-tube boiler comprising a row of tubes connected to a boiler drum, and he appeared to have realised the need for considering questions of movement due to expansion. Before the advent of the steam turbine there was no particular demand for large water-tube boilers, and shell boilers of Lancashire or economic type could provide all the steam required for reciprocating engines. Power-station practice favoured shell-type boilers in many instances, and the size, working pressure, and steam temperature were all limited by the reciprocating engines installed.

At the time when land installations of water-tube boilers were only competing in size with shell boilers, developments were steadily proceeding in the marine world, where the water-tube boiler's features of light weight and compactness were distinct advantages. As early as 1898 marine water-tube boilers were built to evaporate 50,000 lb. an hr. but afterwards there seemed to have been a lull in development, and both the Royal Navy and the Mercantile Marine appeared to have preferred shell boilers of the Scotch marine type. Later the position in the marine world changed, particularly during recent years, during which a large number of marine water-tube boilers had been installed. Working pressures for land water-tube boilers had increased considerably since 1900, when the average pressure for general purposes appeared to have been about 120 lb. per sq. in., using saturated steam. Between 1900 and 1907, Lancashire boilers with a working pressure of 160 lb. per sq. in., generating superheated steam at a final temperature of about 600° F., were being installed in power stations. Reciprocating engines were still being used in many cases with jet condensers. The war of 1914-19 appeared to have checked progress, for no great advance seemed to have been made between 1914 and 1920, except perhaps in a few instances, where somewhat larger steam turbo-generators were installed.

At present, he said, steam pressures of 650 lb. per sq. in. were general, whilst many plants operated at 850, and some at 1,500 lb. per sq. in., and a few boilers worked at even higher pressures. Steam temperatures had similarly increased until now temperatures of 850° F. were normal, whilst in several instances temperatures of 900° F. were employed and in a few cases it was even higher, up to 960° F. Similarly, evaporation rates had increased, and boilers having a rating of 200,000 lb. an hr. were now common and there were several instances of ratings of 300,000-350,000 lb. an hr., and a few in this country of the order of 550,000 lb. an hr.

Automatic boiler control had many possibilities, and could, if intelligently applied and used, be of great assistance to a trained operating personnel. In this respect the development of automatic soot-blowing equipment might be referred to; this had considerable possibilities, and should be of assistance in improving the availability of many boiler plants of complex design.

Materials, Design, and Manufacturing Processes

The general progress in boiler construction necessitated the use of new methods of manufacture, in which increasing advantage was taken of the many special alloy steels developed by steelmakers, which had properties of particular interest in the employment of higher pressures and temperatures. A considerable number of very high-class creep-resisting alloy steels, now available for high-temperature high-stress service, were used for

tube supports, which were exposed to high temperatures and which had to be highly resistant to scaling and creep during prolonged service. Other steels of lower alloy content gave admirable properties, making them suitable for use as superheater tubes, which also had to be resistant to creep and oxidation, both from the steam and the gas side.

Other steels now available combined strength with ductility at moderate temperatures and might find application in the manufacture of light-weight boiler drums; such steels had been in use for some years on the Continent, and their further development would be watched with considerable interest in this country.

In the new methods of construction, welding by various methods formed an increasingly important part. For example, welded drums had been in service on the Continent and in America over a considerable period. Following American and Continental experience, welded boiler drums had made a somewhat belated appearance in this country. Increasing use was now being made of this method of fabrication which had proved to be excellent in service. The electric metallic-arc process was universally adopted; the actual welding was carried out either by hand or machine methods. Either system appeared to be equally capable of producing satisfactory welds.

As a result of intensive research, considerable progress had been made in boiler design over the last 15 to 20 years, and there were now a number of specialised types of boilers which had novel constructional features, based upon sound principles.' These boilers would be grouped as follow:—

(1) Forced-water circulation, such as the La Mont and Velox.

(2) Forced-steam circulation, such as the Loeffler.

(3) "Once-through" boilers, such as the Benson, Sulzer, and Ramzin.

(4) Boilers utilising fluids other than water, such as the mercury boiler.

(5) High-speed revolving boilers, such as the Vorkauf and the Huettner turbine boiler.

Descriptions and illustrations of these types followed.

Future Developments

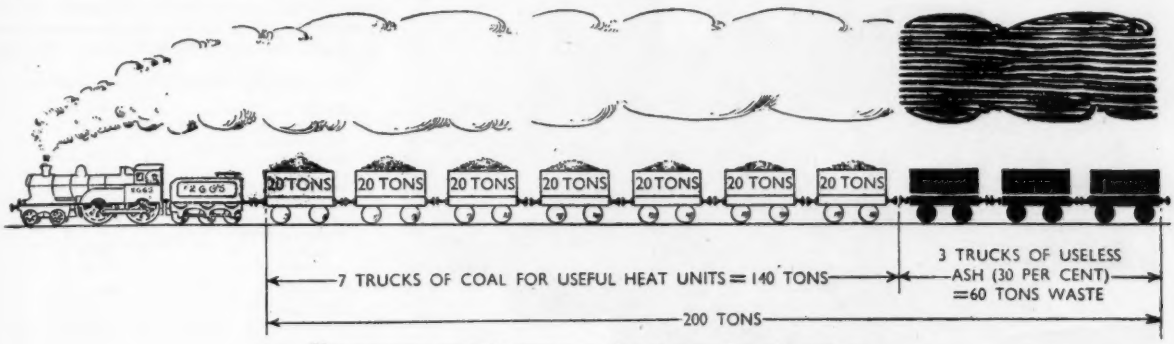
Industrial and domestic demands for electrical power had been increasing yearly and, looking to the future, the increase might continue at an even greater rate. This growth of load and concentration of demand would undoubtedly necessitate the adoption of even larger power stations, with greater capacities of individual electrical generating sets and boilers. The average size of turbo-generator now being installed was 30,000 kW, but in the future 50,000 kW might easily be the average size, and possibly 100,000 kW might become the average size, with 100,000 kW in individual generating units. The larger sizes of generating sets would undoubtedly bring with them increased size of individual boiler units, and this tendency would make boiler availability even more important. Boiler units with capacities of 300,000, 350,000, or even 500,000 lb. an hr. might be generally adopted. The power which would be generated by hydro-electric stations in Great Britain was only a minute fraction of the total requirements, and the present means of generating electrical power was likely to continue on the present lines by the use of steam-driven turbo-generators. The only suitable fuel now generally available in this country, and likely to remain so, for the production of steam, was coal.

It was very interesting to note that at the present time considerable importance was being attached to securing an increase in what was termed "boiler availability," even at the expense of some of the thermal efficiency of the plant. High thermal efficiency had to be considered in relation to "dollar" efficiency. It had to be appreciated that, in designing boiler plant for very high efficiencies, say 87-89 per cent. (based on the gross calorific value of the fuel), low exit gas temperatures were necessary. From such low temperatures corrosion might arise, also deposits in the air heaters, which might cause the plant to be shut down and might thereby reduce the availability period of the boiler plant. It thus appeared to be more important to instal a plant in which, by permitting a little lower efficiency, the availability period was considerably increased and the cost of maintenance reduced to a minimum.

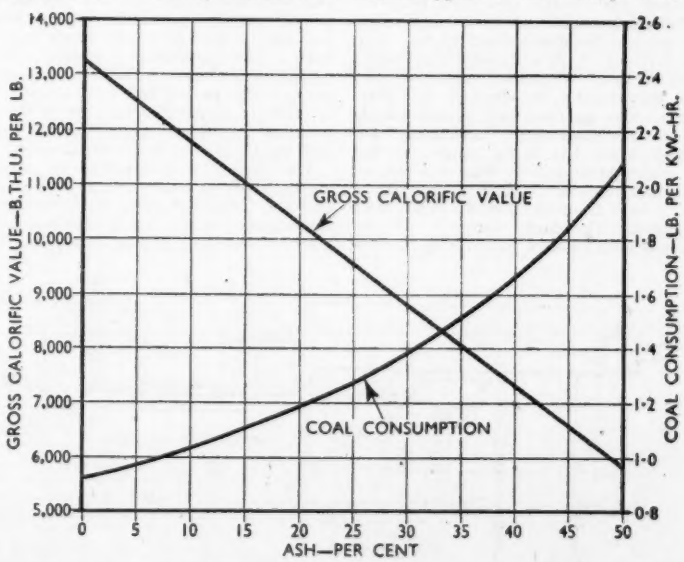
The use of certain inferior types of fuel in boilers which had been designed for normal types of fuel, usually meant that the output of each boiler was reduced, in some cases by as much as 25-30 per cent. below normal. This often meant that four boilers had to be in operation when burning inferior fuel to give the output which, with a good coal, could have been obtained with three boilers.

One had to appreciate the present diffi-

(*Continued on page* 429)



Unnecessary waste in transport due to excessive ash content

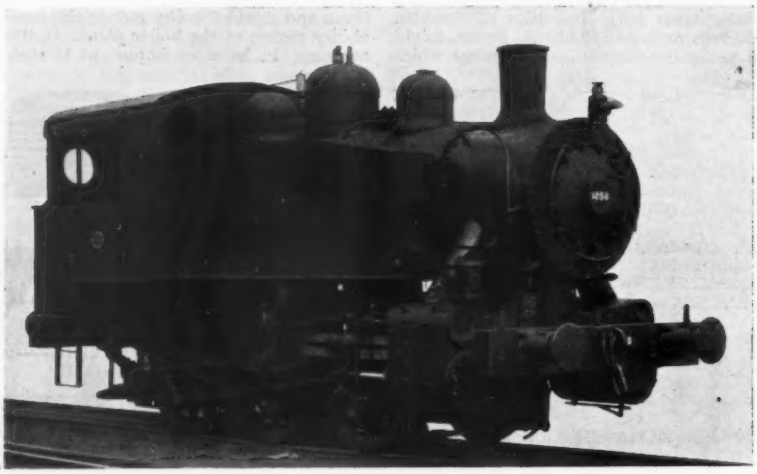


Effect of ash content in coal on calorific value and energy obtainable

The chart shows that with 10 per cent. ash, for example, the gross calorific value is 11,760 B.Th.U. per lb. and the coal consumption is 1·036 lb. per kW.-hr, Similarly, with 30 per cent. ash the corresponding figures are 8,820 B.Th.U. per lb. and 1·382 lb. per kW.-hr. The gross calorific value of the coal, as dried, is taken as 14,700 B.Th.U. per lb. and the moisture content as 10 per cent.

American-Built 0-6-0 Type Tank Locomotives for Use in Great Britain

These engines have been built by the H. K. Porter Co. Inc., of Pittsburgh, to the order of the Ministry of Supply



General view of one of the first of the American-built tank engines to arrive in this country

SEVERAL locomotives of the type illustrated and briefly described herewith have been delivered recently in this country to the order of the Ministry of Supply. They are of the 0-6-0T type with outside cylinders driving the rearmost pair of coupled wheels; steam distribution is effected by Walschaerts valve gearing, and piston valves 8 in. dia. are employed. The engines are designed for the 4 ft. 8½ in. gauge, and the 0-6-0 wheel arrangement was selected as being most suitable in order to provide a compact high tractive effort 16 B.SS. load locomotive. The high efficiency usually associated with modern locomotive designs and obtained by the use of special materials and various economy devices was sacrificed in this case for simplicity and ruggedness, and special attention was given to details with a view towards easy maintenance and repair or replacement. The basic design permits the use of either bituminous coal or oil fuel; conversion from one to the other requires the usual changes at the firebox and front end, and fuel compartments.

The boiler is constructed of ordinary carbon steel, of flange and firebox quality, and the regulator valve is located in the steam dome, on the top of which latter the safety valves are fitted. Two sandboxes and a top feed device are mounted on the top of the boiler barrel. The cylinders are of cast-iron bolted to cast-steel bar-type frames; the connecting and coupling rods have solid ends, and the crank pins are oil lubricated. The rods are fitted with extra large oil reservoirs of rectangular pressed and welded construction, attached to the rods by means of a central stud and tack welding to the rod at the lower four corners of the reservoirs. Mechanical lubrication is provided for the main steam valves and cylinders, and the axleboxes are packed with waste. The injectors are of the non-lifting pattern, designed to handle feed-water at 132° F. The locomotives are equipped for operation with steam brakes only.

The principal particulars are as follow:

Gauge	4 ft. 8½ in.
Cylinders dia.	16½ in.
Piston stroke	24 in.
Wheels dia.	4 ft. 6 in.
Journals	7½ in. × 9 in.
Wheelbase	10 ft. 0 in.
Boiler dia.	4 ft. 4 in.
Working pressure	210 lb.
Heating surfaces—	
Firebox	86 sq. ft.
Tubes	790 sq. ft.
Total	876 sq. ft.
Grate area	19·4 sq. ft.
Firebox length	5 ft. 6 in.
width	3 ft. 6½ in.
Volume	75 cu. ft.

The boiler contains 150 tubes (2 in. dia.) and 10 ft. long. In working order the locomotive weighs 44 tons 13 cwt.; the water capacity of the side tanks is 1,200 U.S. gal. The coal capacity of the bunker is 1 ton, or if oil is used, 300 U.S. gal. is carried in a deck tank. The tractive force exerted by the locomotive is 21,600 lb.

This is an interesting example of what can be achieved in building a powerful shunting engine of simple design and moderate weight. The tractive force of 21,600 lb., as will be realised, largely results from the use of a boiler pressure of 210 lb. per sq. in.

We are indebted to the Ministry of Supply for the above particulars and also for the photograph on this page and the drawings from which the illustrations have been prepared. The engines were built by the H. K. Porter Co., Inc., of Pittsburgh, Pa., U.S.A.

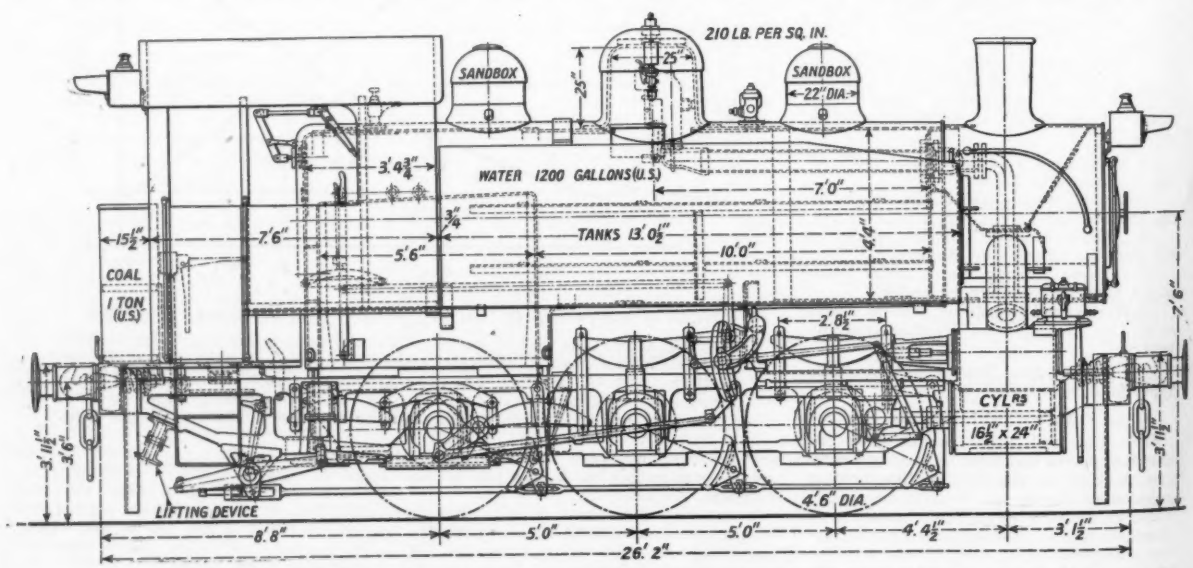
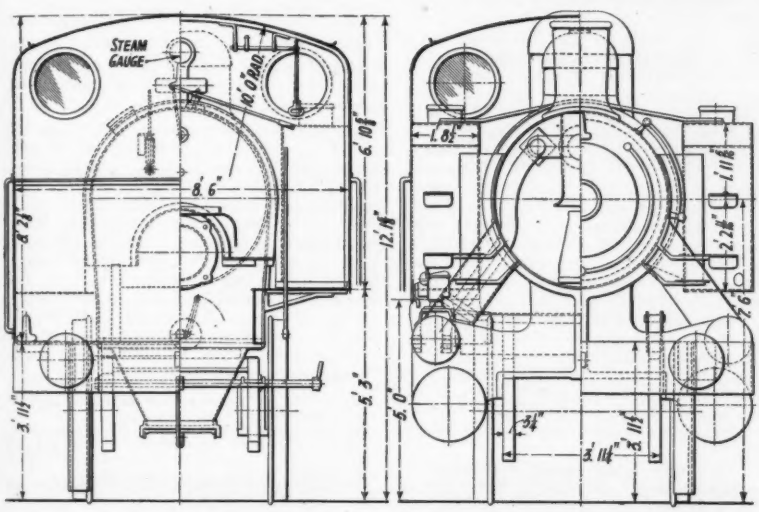


Diagram showing some of the principal dimensions of the 0-6-0 tank locomotives which have been built in the United States for use in this country

One of the Ministry of Supply 0-6-0 type shunting tank locomotives seen under service conditions. Moderate weight combined with simplicity of design and high power output characterise the design



Cross end views in half section at both ends of the 0-6-0 type American-built tank engines for the Ministry of Supply

A Level Crossing in Portugal

A level-crossing keeper at the door of his cottage on the road from Lisbon to Cintra

A view of the level crossing with a Portuguese Railways Company train approaching

Photos] [Gilbert Matthews

The Portuguese Railway Company works the Government railways under lease and the system operated by the company is now about two-thirds of the total railway mileage in Portugal

Permanent Way Tests and Practice on the L.M.S.R.—I

Abstract of a recent paper by Mr. W. K. Wallace to the Institution of Civil Engineers

THE main lines of the L.M.S.R. were originally laid out with circular curves springing directly from the tangents, but as the speed increased, the necessity for transition curves became apparent, and by 1930 all severe curves on the main lines had been re-aligned with transition curves, utilising the Hallade instrument and methods. The acceleration of passenger trains, and particularly the running of ultra high speed trains such as the Coronation Scot, showed that transition curves and curve maintenance, which were perfectly satisfactory at speeds of 60 and 70 m.p.h., were uncomfortable at speeds of 90 m.p.h. The same applied to transition from one radius to another within a compound curve.

Preparatory to putting the Coronation Scot into regular service, a test run was made in under 6 hr. each way between Euston and Glasgow in November, 1936. As a result of the Hallade records obtained, a programme of work was put in hand to improve the running and ease speed restrictions. The test showed that a maximum speed of 90 m.p.h. could be permitted, except where permanent speed restrictions existed. It was found necessary to instal new transition curves in a number of the easy curves which had not been transitioned before, and many existing curves had to have their transitions lengthened and eased. In dealing with transitions, a chord is used the length of which, in feet, is 1·61 times the maximum anticipated speed in miles per hour, and it was necessary to make the length of the transitions a minimum of 5 half chords. On well aligned curves a 3 in. cant deficiency was permitted in certain instances where the Coronation Scot would be the only train attaining such deficiency.

Preparatory to the regular running of this train, 269 curves were re-aligned, totalling 244 single track miles. The permanent alignment of these curves was marked by concrete monuments sunk in the 6-ft. way. In addition, 19 junctions were improved and 14 miles of tangent re-aligned and pegged to dead straight.

Much of the work in connection with the improvement of junctions was due to altering them to the two-level design. Apart from this major two-level work, numerous simple connections to and from the main lines were two-levelled in order that the main line cant might be maintained at the correct amount. As a result of this work, 20 existing speed restrictions were relieved or abolished, and in 12 cases where speed restrictions would have had to be imposed, the improvement carried out rendered them unnecessary.

A general re-timing and acceleration of trains on the Midland Operating Division followed and entailed similar work on curves. The mileage of single track curve re-alignment annually was:—

1929	...	...	50	1934	...	...	153
1930	...	...	75	1935	...	...	163
1931	...	...	120	1936	...	...	165
1932	...	...	129	1937	...	...	297
1933	...	...	150	1938	...	...	205

By progressively increasing the thickness of the chair seats under the switch heel and the outside rails, thus beginning the super-elevation at the heel of the switch planing instead of after the crossing, an increase in the speed through turnouts can be permitted. In one case the use of two-level chairs and a transitioned lead enabled the restriction over the branch to be raised from 30 to 50 m.p.h. The layout included "E" switches with "F" planing, 1 in 16 common crossings, followed by 1 in 12 switch diamonds. Two-level chairs were used on the main line as well as on the branch so as to keep it free from superelevation, although this meant inserting gradients. Originally the increase in thickness of the chair seat was $\frac{1}{2}$ in. per chair, but in some layouts this was found to give too rapid a rise for high speed work, and an alternative rise of $\frac{1}{16}$ in. per chair was introduced. The total increment in chair seat thickness is $1\frac{1}{2}$ in. If greater superelevation than $1\frac{1}{2}$ in. is necessary, this can be attained by canting the crossing timbers and using two-level chairs in both switch rails.

It was found in applying standard permanent way in high speed junction work that the usual switch used for a given angle of crossing resulted in an excessive lateral thrust at the switch point. It was found that if the planing of the next flatter switch were given to the blade, the thrust heretofore concentrated at the switch point was divided over the point and the heel. This requires only two additional slide chairs, the ordinary heel chairs following at standard spacings. Some 53 junctions have been relaid with two-level chairs with notable relaxations in the speed restrictions. The only objection is that more patterns have to be kept in stock, but as the running has been improved, the maintenance has been reduced.

As it was thought that spreading of gauge on curves might arise when the mileage run at high speed was increased materially, tests were made between L.M.S.R. standard track with screw fastenings, G.W.R. through-bolted track, and L.M.S.R. through-bolted track. The test lengths were laid between September, 1934, and April, 1935. The L.M.S.R. design of through-bolted track utilises a chair with a plain base. In the G.W.R. type the chair base has lateral serrations and the sleeper is adzed to fit these before creosoting. Ten places were selected where lateral stresses were high. In each location a length of standard road, one of G.W.R. and one of L.M.S.R. through-bolted type, was laid. Centre punch marks on each chair located a gauge distance between the chairs on each sleeper.

It will be seen from Table I, that traffic conditions varied considerably, and that the test was a representative one.

In addition, tests were carried out at Crewe in conjunction with staff of the Research Department, in which horizontally applied loads were imposed on chair-sleeper assemblies carrying a constant 10-ton vertical load on each chair. Solid steel wedges were used in place of keys to eliminate the widening of gauge due to compression of the key. An increasing horizontal load was applied to the rail heads by a horizontal jack in the centre. Measurements were made at regular increments of horizontal load throughout, namely:—

(1) Arching of sleepers over central length of 4 ft. 11 in. between chairs.
(2) Extension of sleeper between chairs or baseplates.
(3) Lift of the inner end, depression of outer end, and lateral movement of each chair or baseplate, relative to the sleepers.
(4) Overall spread of gauge between centres of rail heads.

In the case of flat-bottom rails with

TABLE I.—SPREADING OF GAUGE ON CURVES: TESTS OF SCREWED STANDARD AND BOLTED CHAIRS

Locality	Grade, 1 in	Curve, ch.	Cant, in.	Period of test, months	Trains per day		Av. speed, m.p.h.		Per cent. of chairs showing spread			Maximum widening of gauge		
					Pass.	Goods	Pass.	Goods	(a)	(b)	(c)	(a)	(b)	(c)
St. Albans ...	285 up	70	2½	81	51	14	55	35	51·52	22·23	6·76	0·140	0·136	0·118
Govilon	38 dn.	11	4½	82	11	8	20	15	68·64	93·53	—	0·292	0·332	— (1)
Lancaster... ...	98 dn.	28	—	40	42	38	52	31	66·47	21·53	—	0·579	0·376	— (2)
Tebay	146 dn.	62	4½	76	30	25	60	34	42·86	—	4·91	0·276	—	0·116
		76	3½											
		76	3½											
Milnthorpe ...	173 dn.	70 l.h.	2½	70	38	28	60	34	40·5	3·99	18·72	0·412	0·077	0·236 (3)
		75 ,,	2½											
		53 ,,	3½											
		49 r.h.	3½											
Great Glen ...	298 dn.	160	2½	67	40	40	55	35	30·31	—	0·71	0·033	—	0·041
Berkhamsted ...	335 dn.	200 r.h.	1½	79	70	19	65	40	73·91	31·66	46·13	0·238	0·124	0·272
		162 ,,	2½											
		56 l.h.	4½											
Weaver Jct. ...	330 up.	120	1½	41	36	21	50	31	1·94	—	5·75	0·064	—	0·041 (4)
		75-160	2½-1½											
		75	2½											
Leighton Buzzard ...	927 dn.	60	4½	76	57	20	65	36	68·22	—	86·79	0·175	—	0·215 (5)

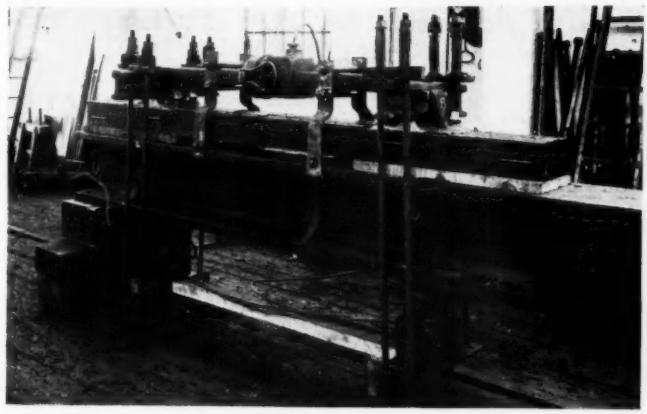
(a) L.M.S.R. standard fastenings (screwed) (b) G.W.R standard fastenings (through-bolted). (c) L.M.S.R. through-bolted fastenings. (1) L.M.S.R. standard, reset to gauge, 3.3.38. (2) L.M.S.R. standard, reset to gauge three times, first 16.9.35 (48 sleepers relaid 17.5.38). (3) General spread in 1940 owing to slow running during air raids. Road re-gauged in 1940. (4) L.M.S.R. standard (probably reset to gauge in1937). (5) General spread in 1940 owing to slow running during air raids. Road re-gauged in 1940

baseplates, the following additional measurements were made :—

(5) Horizontal movement of rail relative to baseplates.
(6) Lift and depression of the rails relative to sleeper.
(7) Flexing of the web and foot of the rail.

All sleepers were selected Baltic redwood. Six specimens of b.h. and four of f.b. rails were tested. The assemblies supplied by the G.W.R. and the L.N.E.R. were complete and ready for testing. The L.N.E.R. sleepers were heart side up in accordance with that company's practice. All G.W.R. and L.M.S.R. sleepers were sap side up. The bolted chairs were of the following types :—

G.W.R. standard pattern with serrated base fitting into grooves pre-adzed in the sleepers.
L.N.E.R. with triangular section ribs on base parallel to the rail, engaging saw cuts in sleeper.
L.M.S.R., B.S.I., with short, triangular section projections in base intended to be rolled into sleeper by traffic and followed up by tightening fastenings after the first few days in the road. For the test the bolts were tightened by spanner.
A.S.I.A., plain base.

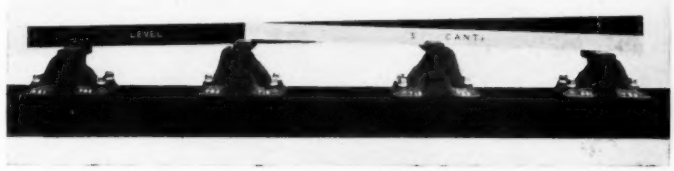


Track resistance to lateral loading apparatus and specimen under test

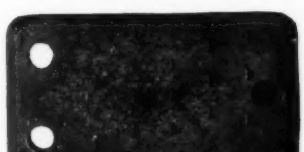
Standard chair (G.W.R.) with serrated base, 2-hole fastening for through bolts

Table II gives details of the more important assemblies tested. In addition, the spreading of gauge at 10-ton horizontal load is shown in the last column.

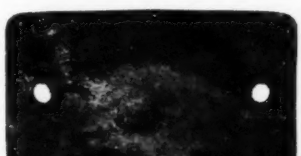
Generally, the through-bolted designs showed great stiffness, and there was not much to choose between the various designs. A feature of the results was the large resistance offered by chairs having underside projections but otherwise L.M.S.R. standard, secured by three screws, in both cases with the omission of the felt pad. These gave results comparable with those obtained from through-bolted assemblies, and failure was caused by breaking of the chair jaws. Further, the resistance of the chairs with two fastenings outside and one in should be noted. During each test the readings taken enabled the average contributions of each feature mentioned above to the overall spread of gauge to be computed from the geometry of the assembly. The agreement between the sum of the separate contributions and the directly measured spread of gauge at the rail heads was satisfactory. With the L.M.S.R. and the L.N.E.R. through-bolted chairs, failure in every case was by breaking the outside jaw. The G.W. chairs in two cases broke in the seat of the chair; in the others the break was in the jaw. In the L.M.S.R. standard assembly, but without the felt pad, failure was by breaking the chair jaw, but with a felt pad failure had not occurred at 1 in. spread. Chairs with three screws, two outside and one inside, gave a 1-in. spread of gauge without breaking the chair. Tests with f.b. rails terminated with gauge spread exceeding 1 in., the single spike on the inside of the rail being insufficient to resist the overturning tendency.



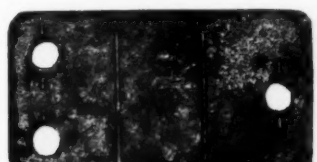
Method of obtaining 3 in. of cant by using two-level chairs and canting of timbers



Standard A.S.I. chair 3-hole fastening (for screws) with projecting ribs



Standard A.S.I A. chair 2-hole fastening (for through bolts) with flat base



Standard chair (L.N.E.R.) with ribs on base, 3-hole fastening for through bolts

TABLE II.—RESISTANCE TO LATERAL LOADING

Type of assembly	Type of chairs	Details of fastenings	Height of screws	Felt pads	Spread of gauge with 10-ton horizontal load
					(in.)
L.M.S.R. 2-bolt	A.S.I.A. plain base	2 bolts, $\frac{7}{8}$ in. dia.	—	No	0·405
L.N.E.R. 3-bolt	L.N.E. S.1B.	3 bolts, $\frac{7}{8}$ in. dia. (2 inside, 1 outside)	—	No	0·4425
G.W.R. 2-bolt	G.W.R. standard serrated base	2 bolts, $\frac{7}{8}$ in. dia.	—	No	0·453
L.M.S.R. 2-bolt chairs with underside projections	B.S.I with underside projections	2 bolts, $\frac{7}{8}$ in. dia. staggered $\frac{1}{2}$ in. off centre line	—	No	0·53
L.M.S.R. 3-screw, standard without felt pads	A.S.I standard	3 standard screws (2 inside, 1 outside)	Correct...	No	0·386
L.M.S.R. 3-screw, standard	Do. do.	Do. do. do.)	Do. ...	Yes	1·382
L.M.S.R. 3-screw chairs with underside projections	Do. with underside projections (as type B.S.I)	" " "	Do. ...	No	0·386*
L.M.S.R. 3-screw	R.S.I	" " (1 inside, 2 outside)	As left by screwing machine	Yes	1·359
L.M.S.R. 110-lb. f.-b. rail and spikes	Baseplates	3 double-leaf spikes driven into $\frac{13}{16}$ in. holes (1 inside, 2 outside)	—	No	1·02
L.M.S.R. do. do.	Do.	3 double-leaf elastic spikes driven into $\frac{1}{4}$-in. holes (1 inside, 2 outside)	—	No	0·527

* Jaw broke at 9·25 tons load

Alternative Proposals for New Passenger Station at Berne

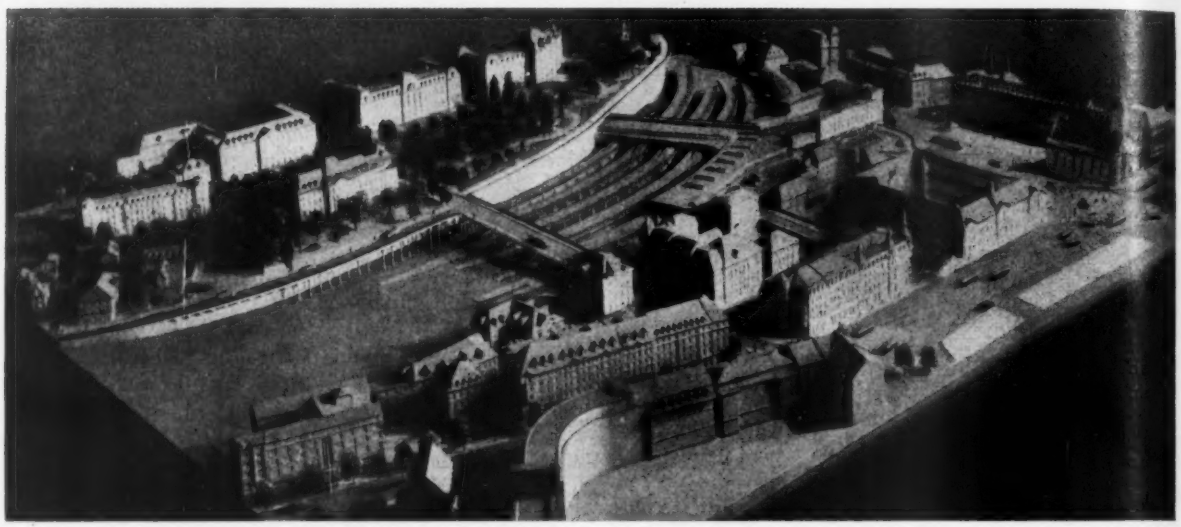
Details of two schemes which have been prepared by the Swiss Federal Railways

ALTERNATIVE schemes have been prepared by the Swiss Federal Railways for a new passenger station at Berne. One proposal provides for track additions on the north side of the station, and involves cutting away the area of rising ground on that side known as the Grosse Schanze; the layout is then as shown by the model in the accompanying illustration and the sectional drawing, Fig. 1. This is the solution preferred by the Swiss Federal Railways, but the alternative of a subterranean widening, as shown in Fig. 2, avoids encroachment on the grounds flanking the railway. This arrangement has operational disadvantages and also would cost about 3,000,000 francs more than the first scheme. Both plans provide for a station of the flyover type.

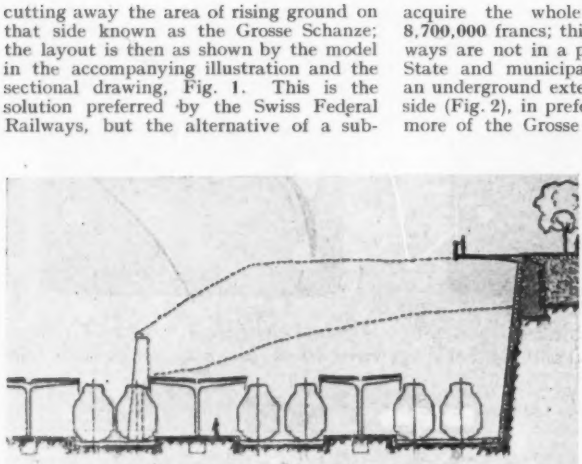
Extension of the station southwards, on the town side, could be effected only by taking over a part of the Burgerspital area. According to the Federal Assessment Committee, it would be necessary to acquire the whole site at a cost of 8,700,000 francs; this outlay Federal Railways are not in a position to meet. The State and municipality of Berne favour an underground extension on the northern side (Fig. 2), in preference to cutting away more of the Grosse Schanze, and this is still under discussion. The civic authorities also wish the station building to be arranged so that satisfactory traffic connection with the town can be provided.

The Swiss Federal Railways are, of course, prepared to co-operate with the cantonal and municipal authorities in seeking a solution with maximum consideration to the wishes of the community. In particular, the Federal Railways do not adhere unconditionally to their proposed fly-over arrangement if they can acquire the back part of the Burgerspital property, that is, the subsidiary buildings, at an acceptable price. Investigations are in progress to determine whether it would be practicable and convenient, for the control of traffic conditions, to have the station on the same level as the railway track.

The first decision to be made, however, is whether an open or a covered layout is to be provided along or under the Grosse Schanze. The Federal Railways prefer the open layout and in any case cannot commit themselves to the extra expenditure of about 3,000,000 francs involved by the underground layout. Station improvements at Berne are impossible without appreciable sacrifices by the parties concerned, but it felt that the railways cannot be expected to carry the considerable extra cost of the underground layout (Fig. 2) as well as the operational disadvantages of this arrangement.



Open layout for new passenger station at Berne as seen from the south-west. The illustration was made from a photograph of a model



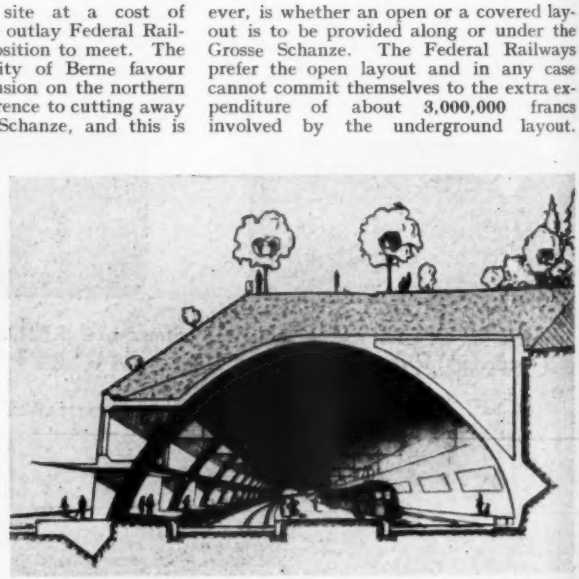


Fig. 1 *(above)—Cross-sectional view of open layout of Berne Station extension, involving cutting away of the Grosse Schanze*

Fig. 2 *(right)—Alternative layout underground*

RAILWAY NEWS SECTION

PERSONAL

The Minister of Supply stated in the House of Commons on October 21 that Mr. A. J. Boyd had become a member of the Tank Board; he will be Director-General of Armoured Fighting Vehicle Production in the Ministry. Mr. Boyd is Managing Director of the Metropolitan-Cammell Carriage & Wagon Co. Ltd.

Mr. J. W. Kidd, General Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd., has been appointed a Director; he will act as Managing Director during the absence of Mr. A. J. Boyd.

Sir Ernest Lemon, Vice-President, L.M.S.R., has been appointed President of the Institution of Production Engineers. The retiring President is Mr. George Bailey, Director of Metropolitan-Vickers Electrical Co. Ltd.

The Hon. J. E. Michaud, P.C., K.C., LL.D., M.P., Minister of Fisheries, Dominion of Canada, who has been appointed Minister of Transport, was born in Quebec in 1888. He studied for a legal career, was called to the Bar in 1914, and took silk in 1935. Mr. Michaud was Mayor of Edmundston, New Brunswick, in 1919, in 1932, and in 1934; he was a member of the New Brunswick Hydro-Electric Commission, 1922-25. He was a member of the Quebec Legislature from 1917-25, and first entered the Canadian House of Commons in 1933; he was re-elected in 1935, and became a Privy Councillor and Minister of Fisheries in the same year.

Sir Murrough J. Wilson, Deputy-Chairman, London & North Eastern Railway Company, has accepted the Presidency of the Railway Benevolent Institution, and Mr. E. J. Missenden, General Manager, Southern Railway, has consented to act as Chairman, for 1943.

Mr. John O'Dowd, who retired recently from the position of Traffic Manager, Great Southern Railways, Eire, was presented at Kingsbridge Station, Dublin, on October 10 with a gold watch by Mr. D. Kirwan, Operating Assistant, on behalf of the District Traffic Officers and the staff of the Traffic Manager's Department. Mr. Kirwan paid tribute to Mr. O'Dowd's admirable character and to his unfailing consideration for his staff, and said that Mr. O'Dowd carried with him into retirement their esteem and good wishes. In reply, Mr. O'Dowd referred to the whole-hearted co-operation which he had always received from the staff, and expressed the hope that the great transport concern to which they belonged was about to enter a new era of prosperity. (A portrait and biography of Mr. O'Dowd appeared in our September 11 issue).

Colonel Stephen John Thompson, D.S.O., M.I.Mech.E., Governing Director of John Thompson Engineering Co. Ltd., who, as recorded in our February 27 issue, has succeeded Mr. W. A. Stanier as President of the Institution of Mechanical Engineers, was born in Wolverhampton in 1875, and is a son of John Thompson, who founded the business of John Thompson Limited, engineers, Wolverhampton. Colonel Thompson was educated at the Wolverhampton Grammar School. He joined the Territorial Army in 1907, served in the war of 1914-19 as a Royal Artillery Battery Commander, and was awarded the D.S.O. in 1916. He is an Honorary Colonel of the 119th Field Regiment. Colonel Thompson is Deputy Lieutenant of the County of Staffordshire, and was High Sheriff of Staffordshire in 1938-39. His publications include various papers read before engineering societies.

Colonel S. J. Thompson, D.S.O., M.I.Mech.E.
President, Institution of Mechanical Engineers

Mr. D. B. Wallace has been appointed Assistant to the Vice-President & General Manager, Canadian Pacific Air Lines Limited. Mr. Wallace's services were formerly on loan to the British Government, when he was Administration Manager of the Atlantic ferry service, which originally was organised by the C.P.R.

Mr. W. A. Shepherd has joined the board of the Trent Navigation Company. Mr. Shepherd is Deputy-President and Chairman of Committee of the Mansion House Association on Transport; he has been Transport Officer of Nestlés Milk Products Limited for many years. He is a member of the Traders' Co-ordinating Committee of the Federation of British Industries, and of the Ministry of War Transport Joint Consultative Committee advising on road-haulage rates.

The Minister of War Transport has appointed Mr. H. D. Drysdale as Deputy to the Regional Transport Commissioner for Scotland.

The late Mr. Antonio Giet, who had been for many years Secretary of the Buenos Ayres Great Southern Railway Co. Ltd., left £66,671.

We regret to record the death on October 17 of Lt.-Colonel W. E. Longfield, late Royal Engineers, formerly of the Sudan Government Railways.

Mr. Robert Letch, Regional Port Director for Scotland, is being transferred to the North-Western Region to succeed Mr. J. Gibson Jarvie. Mr. Letch is Assistant General Manager, Port of London Authority.

We regret to record the death, at the age of 61, of Mr. Frank Buckingham, who was Station-master, Oxford, G.W.R., from 1927-41.

INSTITUTE OF TRANSPORT

Mr. M. J. Watkins, General Manager, Belfast Harbour Board, and Mr. E. Burrow, Assistant to Docks & Marine Manager, Southampton, Southern Railway, have been appointed Honorary Corresponding Members of the Institute of Transport for the Northern Ireland and Southern Areas, respectively.

Mr. G. Dyall, who has retired from the position of Acting Publicity Officer, Great Western Railway, with the exception of three years during the 1914-19 war, when he was lent to the Coal Control, has spent the whole of his 46 years' service in the Great Western Railway Publicity Department. The Advertising Department was formed in 1886 under the late Mr. W. C. Simpson, who founded the department. Before becoming Acting Publicity Officer, Mr. Dyall had served under four successive Publicity Officers, viz., Mr. Fraser, Mr. Grand, Mr. Orton, and Major Dewar. During his long career Mr. Dyall has been engaged in every branch of the railway advertising business, press publicity, pictorial and other posters, literature ranging from comprehensive travel books to the indispensable folder, views in railway compartments, and exhibits in various big exhibitions held all over the world. He was also concerned in the decoration of Paddington and other stations on the occasion of Queen Victoria's Diamond Jubilee, the South African War celebrations, the coronations of King Edward VII, King George V, and King George VI, the

funerals of Queen Victoria, King Edward VII, and King George V, and royal marriages and royal journeys on many occasions. Mr. Dyall recalls with pleasure the many letters his department has received showing the cordial relations which have existed between the company and the public. These letters emanated from Britons resident all over the world, and were frequently of the most friendly description, containing inquiries after the well-being of guards, engine drivers, and others in the Old Country; and it was to Mr. Dyall a great delight to have the privilege of replying to them. He was well known in Fleet Street, and was always helpful and sympathetic to press representatives.

Mr. R. F. Hurford, Trade Advertising Agent, Superintendent of the Line's Office, Paddington, G.W.R., who, as recorded in our October 9 issue, has been appointed Trade Advertising Agent & Acting Publicity Officer, Superintendent of the Line's Office, Paddington, entered the company's service at Exeter in 1911. He obtained varied traffic experience at stations in the west of England, and, after serving for four years with the Royal Marines, during the war of 1914-19, he returned to traffic duties in the Cardiff and London Divisions. He joined the Superintendent of the Line's staff on the formation of the Trade Advertising Department in 1930, and was appointed Trade Advertising Agent in 1939. In this position he has had control of the letting of all space for trade advertisements on the company's system.

Mr. Robert Dixon, Dock Manager, Plymouth, G.W.R., as recorded in our October 9 issue, has been appointed Assistant to the Chief Docks Manager, Cardiff. Before going to Plymouth just over two years ago, he occupied the post of Head of the Commercial Department, Chief Docks Manager's Office, Cardiff, for a period of 12 years. Mr. Dixon entered the service of the Alexandra (Newport & South Wales) Docks & Railway Company in November, 1906, and, during his career with that company, served in the Engineering Department, General Manager's Office, and Cargo Labour Department.

Mr. G. Dyall

Acting Publicity Officer, G.W.R., 1940-42

Mr. R. F. Hurford

Appointed Trade Advertising Agent & Acting Publicity Officer, G.W.R.

Mr. Robert Dixon

Appointed Assistant to the Chief Docks Manager, Cardiff, G.W.R.

Left: A group of British drivers and firemen, who, with locomotives from this country, have been operating supply trains taking aid to Russia over Persian lines. Right: A driver painting the badge of the Royal Engineers on his tender. (*See also our issue of August 21, page 184*)

TRANSPORT SERVICES AND THE WAR—163

Government Road Haulage

The total traffic carried under the Government Scheme for the week ended October 2, including meat, was just under 200,000 tons, an increase on the previous week of nearly 25,000 tons. A feature of the latest returns, from an operational standpoint, is the increase in long-distance traffic. The total long-distance traffic is the highest yet recorded, whilst short-distance traffic shows a sharp decline.

Middlesbrough District Co-ordination

Beginning on Monday, October 12, all workmen's buses operated to, through, or from the Urban District of Billingham by the United Automobile Services Limited, the Stockton Corporation, and the Middlesbrough Corporation, are available for picking up ordinary passengers at recognised stopping places, at the usual fares, when accommodation is available.

Middle East Railway Equipment

It was reported recently that the United Nations had sent to the Middle East 576 locomotives, more than 9,000 wagons, and enough rails for 1,400 miles of track. The British railways have contributed at least 143 locomotives and 1,600 wagons to these totals.

Priority Travel for Workers

In many industrial areas, priority schemes have been in operation for a long time, giving workers in possession of special identity passes priority in boarding road transport vehicles between specified times. With the further reduction of transport facilities, such priority schemes have been made general throughout certain regional transport areas. From October 5 war workers in the Northern Area have been given priority on all public road transport vehicles during specified hours, and non-essential travellers are not allowed to enter the vehicles until priority ticket holders have secured accommodation. Similar arrangements were introduced throughout Scotland, also from October 5. Persons with period tickets or priority passes are entitled to the first opportunity of boarding buses at the expense of other persons in the queue. Employers are required to vouch for their employees before priority passes are granted, and such passes are limited to the routes that lie between the home of the worker and his place of employment.

Metropolitan Railway Locomotives

The heavy bronze nameplates of Metropolitan Railway electric locomotives are to be removed, and the metal used for scrap for the war effort. There are twenty of these engines, all but one carrying names of well-known persons. The complete list is as follows :—

No.	Name	No.	Name
1	*John Lyon*	11	*George Romney*
2	*Oliver Cromwell*	12	*Sarah Siddons*
3	*Sir Ralph Verney*	13	*Dick Whittington*
4	*Lord Byron*	14	*Benjamin Disraeli*
5	*John Hampden*	15	*Wembley, 1924*
6	*William Penn*	16	*Oliver Goldsmith*
7	*Edmund Burke*	17	*Florence Nightingale*
8	*Sherlock Holmes*	18	*Michael Faraday*
9	*John Milton*	19	*John Wycliffe*
10	*William Ewart Gladstone*	20	*Sir Christopher Wren*

One nameplate will be retained for the London Passenger Transport Board's museum of relics. In place of the heavy nameplates, the standard " London Transport " lettering will be exhibited on a board attached to the side of the locomotive. This lettering will be in gold on a red background. The locomotives are also to undergo a change of livery. The present colours —lake with a gold line and black fittings— are to be changed to London Transport standard " Service grey " with a red line between the roof and the body. The reasons for the change are that the present colours are not easy to keep clean and they are also becoming scarce. The numbers of the locomotives will be carried on a large red disc at each end. The roof will be painted with " Bauxite residue " paint. The fittings and solebars will be black and the headstocks red, as at present.

Spring Hooters on London Buses

The shortage of rubber bulbs for bus horns has been overcome by an ingenious device now being made in the London Transport shops. This consists of a short tube made of rexine fabric, resembling a concertina. One end of the tube is sealed ; the other is fixed to the orifice of the horn. The tube is depressed by the driver's hand, and air is forced into the horn and operates it. A coiled spring inside the tube brings it back to its original position. About 100 buses have been fitted with this device, and it will be installed on all vehicles as and when the rubber bulbs wear out.

Women in London Transport Works

Nearly 500 of the 700 women who have entered the London Transport Chiswick bus overhaul works as labourers are now doing semi-skilled tasks. Coming from a variety of occupations, entirely different from engineering, some special tuition is essential to fit them for their new work, and a school of instruction has been established, in which newcomers are given instruction by an experienced engineer. First comes training in the principles of " safety first." Next they are taught to use simple tools, such as hammers, screwdrivers, and spanners. Elementary filing is included. Women who are later to work on the assembly bench, for instance, are then given assembly jobs to do. Each class comprises about eight students, and instruction lasts for a fortnight. Then follows the second stage of the training ; the women are placed in the shops to undertake such jobs as the stripping and assembling of vehicles, cleaning, drilling, fettling work in the foundry, and press operating. They work under the supervision and instruction of the men whom they will ultimately release for military service or for more important engineering work. In short, three months from entering the preliminary class, the raw recruit has usually qualified as a semi-skilled worker. Before the war, none but men were employed at the Chiswick Works ; there are now 481 women on semi-skilled jobs, and 144 women labourers.

Coastal Visits Ban Suspended

The Ministry of Home Security has announced that, in pursuance of a decision of the Government, the Regional Commissioner for the Eastern Region is suspending from October 24 until March 1, 1943 (inclusive), the ban on visits to the coast between the Wash and the Thames. Between the same dates the Regional Commissioner for the South Eastern Region is suspending the ban on visits to the Maidstone area of Kent and the Sussex coastal area from Littlehampton to Hastings, both inclusive. This part suspension is temporary and may have to be cancelled at any time before March 1. The restrictions on the taking up of permanent residence in these areas remain in force.

The ban on visits remains in force in the following areas which are, of course, also subject to the restrictions on the taking up of permanent residence :—

(1) In the whole of Kent except—
- (*a*) those parts within the Metropolitan Police District ;
- (*b*) the boroughs of Dartford, Gravesend, Maidstone, and Tunbridge Wells ;
- (*c*) the urban districts of Northfleet, Orpington, Sevenoaks, Southborough, Swanscombe, and Tonbridge ;
- (*d*) the rural districts of Cranbrook, Dartford, Hollingbourne, Maidstone, Malling, Sevenoaks, and Tonbridge, and parts of the rural districts of Strood, Tenterden, and West Ashford.

(2) That part of Sussex east of Hastings and extending northwards to the Kent boundary ; and

(3) The Isle of Wight.

With the lifting of the ban on visits to the coast between the Wash and the Thames, entry is permitted to :—

Hunstanton, Sheringham, Cromer, Caister, Great Yarmouth, Lowestoft, Southwold, Aldeburgh, Felixstowe, Harwich, Walton, Frinton, Clacton, and Southend.

Sussex coast towns which may be visited include :—

Hastings, St. Leonards, Bexhill, Eastbourne, Seaford, Newhaven, Brighton, Shoreham, Worthing, and Littlehampton.

Access to the foreshore or adjacent areas continues to be barred. In many cases barbed wire and barricades bar the way to beaches and promenades.

Compulsory Producer-Gas Operation

The Ministry of War Transport has sent instructions to all bus operators with fleets of 150 or more vehicles, requiring them to convert 10 per cent. of their fleets to producer-gas operation by July, 1943 ; in all, 57 operators are affected. If an operator is already running some producer-gas vehicles, these will be allowed to reckon as part of the quota. It is said that 2,500 plants will be required, of which 1,500 are to be built by the Bristol Tramways & Carriage Co. Ltd. (a Tilling associate), and 1,000 by Wyllie Harris & Co.

The Ministry of War Transport has also arranged for producer-gas units to be made by three firms : Fry Bros. Ltd., of Greenwich, Neil & Spencer Limited, of Effingham, and Briggs Motor Bodies Limited, of

AIR RAIDS
During an air raid or when an ALERT is sounded, trains will cease to run on the following sections of the Underground
NORTHERN LINE
Bank to London Bridge
Strand to Kennington
via Charing Cross and Waterloo
BAKERLOO LINE
Piccadilly Circus to Elephant & Castle
via Charing Cross and Waterloo
Special buses will run between Piccadilly Circus and Elephant & Castle via Charing Cross Underground Station
EAST LONDON LINE
Shoreditch to Surrey Docks
AVAILABILITY OF TICKETS
Passengers already holding tickets available at closed stations may travel to or from any other London Transport station in the vicinity and by any alternative Underground route. If no such route is available passengers may make or complete their journeys by bus tram or trolleybus without extra payment
At closed stations the ticket office will remain open for the sale of rail tickets which passengers can then use for travel by the alternative routes

New London Transport poster showing the sections of line over which service is at present suspended during air raid alerts. There were three daylight alerts in the London area on October 19 and two on October 26

Dagenham. Five organisations will market and service the producer units. They are the Austin Motor Co. Ltd., Commer Cars Limited, the Ford Motor Co. Ltd., Morris Commercial Cars Limited, and Vauxhall Motors Limited.

The London Passenger Transport Board and Thomas Tilling Limited will give instructions at their works in London to foremen of the operating companies. These two organisations have been chosen because of their experience in the operation of producer-gas vehicles.

Selected operators of goods vehicles, owning ten or more vehicles, will be required to convert 10 per cent. of their fleet. The vehicles converted should be of two or three tons unladen weight, not older than 1938 models.

Increased French Railway Fares

According to the German-controlled Paris Radio, all railway fares in France (except workmen's fares) were raised by 25 per cent. from October 15, in view of increasing costs.

Ukraine-Berlin Railway

The first train of Ukrainian food, 50 wagons, is stated to have arrived in Berlin on September 30. The German Forces captured Kiev, the capital of the Ukraine, on September 20, 1941—just over a year earlier. A substantial mileage of gauge conversion from 5 ft. to 4 ft. 8½ in. by the Germans is implicit in the announcement.

Trams in Germany

The increases in the numbers of passengers conveyed on the various tramways systems of Germany during 1941, to which we have already referred in these columns, appear to apply particularly to towns with populations of between 75,000 and 100,000. This is probably because such towns have been industrialised more rapidly in wartime than the large towns, and therefore have relatively greater increases in their working populations. In such towns the increases in the numbers of passengers conveyed by tram during 1941 were as high as 38 per cent. over the 1940 figures. On the other hand, in Berlin, Hamburg, and Vienna, the trams, elevated railways, and underground railways conveyed an average of only 8 per cent. more persons than in 1940.

The Western Desert Railway

At the outbreak of the war, the railhead of the Egyptian Western Desert Railway was Mersa Matrouh, as shown on the map we published at page 651 of our issue of December 20, 1940, when we gave a brief description of this important strategic line. In February of the present year (see our February 27 issue, page 314) it was officially revealed that an extension of the Western Desert Railway, 108 miles long, enabled Eighth Army supplies to be railborne into areas of the desert where previously they were carried in motor lorries. This line was then reported to be complete and at work, and was said to have been built by New Zealanders in about six months. In his advance to El Alamein, Rommel occupied the whole territory served by the railway, which reached its final railhead at Bir El Hamid, only 15 miles from Tobruk.

In response to a Question in Parliament (see page 427) it has been revealed that the railway is now serving the enemy for some 280 miles from El Daba, behind the German and Italian lines, to Bir El Hamid. It was not possible in the limited time available for the track to be demolished effectively throughout its length by our retiring Eighth Army. As the railway has now been in enemy hands some three months, the enemy has had ample time to make good any damage which our Forces were able to effect before withdrawal. No locomotives, except one which was completely demolished, were allowed to fall into enemy hands. It is known that, since his advance, the enemy has shipped Italian locomotives to Africa, and is at present working his railway traffic with these, and with those wagons which could not be withdrawn by us in time.

Passenger Service Restrictions in Roumania

As a result of acute shortage of rolling stock and of the deteriorating fuel position, a further drastic curtailment of passenger services in Roumania was ordered in mid-September. Only persons able to give satisfactory proof of the necessity of their intended journey are allowed to travel.

New Road between Zagreb and the Sea

A new main road is being built between Zagreb, the capital of the Axis puppet State of Croatia, and the Adriatic coast at Susak, *via* Karlovac. The first section, between Zagreb and Stupnik, is 3½ miles long, and was taken in hand in 1941; it is to be completed during the present year. In the neighbourhood of Zagreb the road has a width of 12 metres (39 ft. 4 in.), and a footpath for pedestrians is provided. In the open country the road is 9 metres (29 ft. 6 in.) wide. Work on the 5-mile section from Stupnik to Horvati was begun recently, and it is hoped to complete this in 1943, when also the third section, between Horvati and Jastrebarsko (10 miles), will be tackled. The old road between Stupnik and Horvati has a number of sharp curves and difficult gradients, but the new road follows an easier course. The Stupnik-Horvati section is to cost Kuna 28,000,000. The distance between Zagreb and Karlovac by the new road will be 47 km. (29 miles), against 56 km. (35 miles) by the old route.

New Trans-Balkan Road Route

A new Trans-Balkan road route is being organised with Italian capital, according to a recent information from Rome. The route begins at Durazzo (Albania) and proceeds *via* Skoplje (Southern Jugoslavia) to Sofia, whence it extends to Russe, the main Bulgarian port on the Danube, opposite Giurgiu, the Roumanian centre for oil export *via* the Danube route. Traffic on this overland route will be operated with high-powered motor vehicles, it is stated, though it is doubtful whether the Albanian section of the road will be able to stand the strain of such traffic for long. Russe, according to Italian plans, is to become an Italo-Bulgarian shipping centre of major importance. A joint Italo-Bulgarian shipping company, the Istok (East), recently established at Varna, is to provide shipping services not only on the Black Sea, but also on the Danube, touching both Bulgarian and Roumanian ports; the extension of these Danube services to regions further up-stream is envisaged, and in this connection the establishment of a Serb as well as of a Croat subsidiary of the Istok is already being planned.

Belgrade Bridges

The three large bridges in Belgrade were destroyed during the hostilities in the early days of the German onslaught on Jugoslavia. The single-track railway bridge across the Save, on the main line to Zagreb, has been repaired by temporary spans, and this bridge has been in use since June, 1942. The suspension bridge for the main road between Belgrade and Zemun, also across the Save, some distance north of the railway bridge, was completely wrecked and submerged in the river. Reconstruction work has been in progress since the German occupation. Materials prepared for a new Theiss bridge in Hungary were eventually used for the new bridge, consisting of a number of spans on temporary piers, and it is now stated that the bridge may be opened before the end of this year.

The largest of the three bridges, the railway bridge across the Danube, on the line to Pancevo, consisted of seven spans. Two spans in the centre were completely wrecked. It took the German Todt service the whole of the remaining months of 1941 to clear the debris. Two existing spans, one at each end of the bridge, were removed, and the gaps filled by embankments. The two spans thus becoming available will shortly be moved to the centre of the bridge and it is expected that the whole of the work will be completed so as to open the line before the end of the present year. At page 262 of THE RAILWAY GAZETTE for February 20, 1942, a map of Belgrade was reproduced, which shows the situation of the bridges.

Railways of Burma

According to a message from Rangoon quoted by the Official German News Agency on October 17, repairs have now been made to damaged railways in Burma and traffic has been resumed on all lines.

Burma to Indo-China Railway Scheme

According to a recent report from Tokyo, the Japanese have evolved a project for an electric railway connecting Burma with Indo-China. The new line would leave the Rangoon-Mandalay main line at Tataunggy (to the south of Mandalay) and terminate at Hanoi, a distance of 1,100 km. (683 miles) away. The cost of the line has been estimated to amount to some Yen 260,000,000. Electric power would be obtained from Burmese rivers. The system of hydro-electric power stations intended to be erected in Burma would also be used to control the annual floods occurring in that country.

"Frozen" U.S.A. Rail Schedules

An order issued by the United States Government on October 1, "froze" all railway passenger schedules from Sunday, October 4, on the basis at which they existed on September 28. No additional trains may be introduced to the time-tables, and special trains to sporting events are forbidden.

U.S.A. Leases British-Owned Railway

The United States War Department has announced that the line from Skagway to Whitehorse owned by the White Pass & Yukon Railway Company, has been leased by the U.S. Army for the duration of the war. The White Pass & Yukon Railway Company holds the securities of certain railways and shipping lines operating in Alaska on the White Pass & Yukon route, but takes no part in their management or operation. The operating companies are the Pacific & Arctic Railway & Navigation Company, the British Yukon Railway Company, the British Columbia Yukon Railway Company, the British Yukon Navigation Co. Ltd., and the American Yukon Navigation Company. The mileage is 110 and the rolling stock includes 10 locomotives, 22 carriages, 198 wagons, 60 miscellaneous vehicles, 4 aeroplanes, 9 steamboats, 8 steam launches, and 21 river barges. The railway which has been taken over connects the coast with the Alaskan-Canadian military highway, as the latter passes through Whitehorse, the headquarters of the North-West Service Command.

Parliamentary Notes

L.M.S.R. Order Confirmation Bill

The London Midland & Scottish Railway Order Confirmation Bill, the object of which is to confirm a Provisional Order under the Private Legislation Procedure (Scotland) Act, 1936, relating to the London Midland & Scottish Railway, was presented to the House of Commons on October 13 and formally read a first time. It passed the report stage on October 14, and was read a third time and passed on October 15. The Bill was read a first time in the House of Lords on October 16. It passed the report stage on October 20, and was read a third time and passed on October 21.

Questions in Parliament

Road Haulage Scheme

Major A. M. Lyons (Leicester East—C.) on October 14 asked the Parliamentary Secretary to the Ministry of War Transport if he would give an assurance that in any proposed modification of the Government's Road Haulage Scheme no preferential treatment would be accorded to, nor any monopolistic position conferred on, any particular transport undertakings large or small.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport) wrote in reply : I am happy to assure Major Lyons that any changes which may be made in the Road Haulage Scheme will be designed to promote the national war effort and not to serve the interest of any particular transport undertaking or classes of undertakings.

Cheap Day Fares

Sir Ernest Graham-Little (London University—Ind.) on October 15 asked the Parliamentary Secretary to the Ministry of War Transport, whether he was aware that the withdrawal of cheap day tickets would involve a handicap on part-time students, especially on external students of the University of London, who were faced with expenditure for travelling from their work to technical and other institutions affording higher education in evening and other classes, examples of which had been furnished to him ; and whether he would institute special arrangements to meet this position.

Mr. P. J. Noel-Baker in a written reply stated : As I said in a reply to Mr. R. W. Sorensen (Leyton West—Lab.) on October 7, the withdrawal of cheap day tickets was a necessary measure which the Minister of War Transport adopted with great regret. He is, however, convinced that to admit the exception proposed by Sir Ernest Graham-Little would lead to similar demands by others with equal claims to consideration, and would thus defeat the purpose which he has in view.

Western Desert Railway

Captain L. D. Gammans (Hornsey—C.) on October 20 asked the Secretary of State for War if the successful attack by the Royal Air Force in the Middle East on an eastbound enemy train near Bir Habbata meant that the desert railway, its locomotives and equipment were not destroyed by the Eighth Army during its retreat into Egypt.

Sir James Grigg (Secretary of State for War) : The railway stretches for some 280 miles from El Daba behind the German and Italian lines to Bir El Hamid, 15 miles from Tobruk. It was not possible in the limited time available for the track to be effectively demolished throughout its length. As it has now been in enemy hands some three months, the enemy have had ample time to make good any damage which we were able to effect before our withdrawal. No locomotives, except one which was completely demolished, were allowed to fall into enemy hands. It is known that since his advance, the enemy has shipped Italian locomotives to Africa. He is at present working his railway traffic with these, and with those wagons which could not be withdrawn by us in time. (*See reference on page* 426).

Ministry and Petroleum Board Officers

Mr. A. Edwards (Middlesbrough East—Lab.) on October 20 asked the Minister of Fuel & Power what class of officers in his Ministry, or connected with the Oil Fuel Board were allowed to obtain petrol without coupons ; and for what reason.

Mr. Geoffrey Lloyd (Joint Parliamentary Secretary, Ministry of Fuel & Power) : No officers of the Ministry of Fuel obtain petrol without the surrender of coupons. In the case of the Petroleum Board, to which I assume Mr. Edwards refers, no officers obtain petrol for their own cars without coupons, but vehicles operated by the board in connection with its business are allowed to draw petrol at the board's own depots without the surrender of coupons.

Mr. Edwards : Does that mean that there are conditions which apply to these two Departments which do not apply to others ?

Mr. Lloyd : No, Sir, except that in the case of the Petroleum Board it would seem unnecessary to prohibit them from issuing petrol to themselves until they have given themselves a coupon.

Mr. Edwards : Is the Parliamentary Secretary satisfied that there is an adequate check on the people in this Department, just as in other Departments ?

Mr. Lloyd : Yes, Sir, a very strong check.

Taxation on Petrol

Mr. A. Edwards (Middlesbrough East—Lab.) on October 20 asked the Chancellor of the Exchequer whether, as private motoring had now been practically abolished and running costs of all vehicles were now charged ultimately to the Government, he would consider removing the taxation of petrol in order to release staffs engaged on this work for productive work for the duration of the war.

The Chancellor of the Exchequer (Sir Kingsley Wood) : No, Sir. It is not the fact that the running costs of all vehicles are charged ultimately to the Government.

Man and Woman Power

Mr. W. Thorne (Plaistow—Lab.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport, how many railwaymen had been taken for the fighting forces, and how many women were now engaged upon the railways.

Mr. P. J. Noel-Baker (Joint Parliamentary Secretary, Ministry of War Transport) : 98,879 male employees of the railways were serving with H.M. Forces on August 31, 1942. On September 30, 1942, the railways had 105,656 women in their employment.

Mr. Thorne asked if these women were paid in accordance with the wages that were paid to the men who had joined the Forces.

Mr. Noel-Baker replied that that matter was dealt with by the competent trade union authorities. He would look into the details of the question, but he would like to take the opportunity of paying a tribute to the example that the railways had shown in training and employing great numbers of women.

Snow Fighting Arrangements

Sir Robert Rankin (Liverpool, Kirkdale —C.), on October 21, asked the Parliamentary Secretary to the Ministry of War Transport, whether, in order to meet extreme weather conditions during the coming winter months, the snow-fighting arrangements and equipment of all the railways had been overhauled and improvements effected where necessary.

Mr. P. J. Noel-Baker : Yes, Sir. Special attention has been given to this problem, and the necessary arrangements have been made.

First Class Compartments

Mr. R. J. G. Boothby (Aberdeenshire East—C.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport whether travellers holding third class tickets were entitled to use first class carriages if no seating accommodation in the third class was available.

Mr. P. J. Noel-Baker : The instructions issued to railway staff are that, when third class accommodation on a train is seriously overcrowded, third class passengers may be allowed to occupy first class seats without extra charge. It is, however, necessary to have some regard to the requirements of passengers holding first class tickets who may join the train later in its journey.

Mr. Austin Hopkinson (Mossley—Nat.) : Is it not a fact that this is a democratic country and that to nine-tenths of the population democracy means travelling first with a third class ticket ?

Mr. Boothby asked who was to decide what was serious overcrowding, and Mr. Noel-Baker replied that that was left to the discretion of the competent railway officials who were charged with administering the instruction.

Mr. W. Thorne (Plaistow—Lab.) asked if the best solution was not to wipe out first class travelling altogether.

Mr. Noel-Baker said he thought the reasons in favour of the retention of first class accommodation still held good.

Mr. T. Driberg (Maldon—Ind.) : Is it correct that a third class passenger cannot enter a first class carriage without permission from the guard or ticket collector ?

Mr. Noel-Baker : A third class passenger has no prerogative right to a first class seat without permission of the competent official. That is the only possible system, and I think the officials are doing very well.

(*See pages* 409 *and* 413)

Season Tickets for Juveniles

Mr. J. Parker (Romford—Lab.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport whether he was aware that railway season tickets were available at half rate to juveniles under the age of 18 if their wages did not exceed 25s. weekly ; that the increase in the cost of living had been followed by the granting of war bonuses which had largely removed this advantage ; and whether the wage level concerned could now be raised to 30s. a week.

Mr. P. J. Noel-Baker : The maximum wage qualification for season tickets at juvenile rates was increased in December, 1940, from 18s. to 25s. per week. This increase reasonably corresponds with the increase in the cost of living, and I do not think it would be wise to adopt Mr. Parker's proposal.

Mr. Parker asked if the Parliamentary Secretary was aware that there were a great many juveniles who did not get high wages and that those who had to travel long distances suffered very much from the present arrangement.

Mr. Noel-Baker said that those who did not get more than 25s. would still be able to get tickets at half rate. For the others there must always be difficult borderline

cases, but the increase made 18 months ago still reasonably corresponded to the increase in the cost of living.

Passengers in Guards' Vans

Mr. J. H. Martin (Southwark Central—Lab.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport, under what conditions, in existing circumstances, passengers might travel in the guard's van where no other accommodation was available on a train.

Mr. P. J. Noel-Baker: Under normal circumstances, passengers are not permitted to travel in guards' vans. In exceptional circumstances, the station-master may authorise passengers to travel in guards' vans when he is satisfied that this is not likely to impede the guard in carrying out his duties.

Mr. Martin said that in practice this was left to the guards and they had very diverse standards, some allowing half a dozen and others only one or two. Did the Parliamentary Secretary not think it desirable to establish some sort of uniformity?

Mr. Noel-Baker said that human nature was always variable. These were the instructions given to the railway personnel, but he would have the point looked into.

Merseyside Dock Labour Scheme

Mr. H. Graham White (Birkenhead East—Lib.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport if he would state the circumstances in which Sir John Forster's inquiry in the Merseyside Dock Labour Scheme was set up.

Mr. P. J. Noel-Baker: Yes, Sir. When the Merseyside Dock Labour Scheme was first adopted, it was foreseen that, after a trial period, a general review of the working of so important an experiment would be required. A short time ago, the Government decided that this review should be made, and asked Sir John Forster to conduct it. Sir John Forster has been asked by the Minister of Labour & National Service and the Minister of War Transport to review on their behalf the conditions obtaining under the Merseyside Dock Labour Scheme, and to report to them. I would point out to Mr. Graham White that these terms of reference are very general and that they imply no reflection on anyone who has helped to work the Scheme.

Mr. White: May we assume that the decision to set up this inquiry was in no way influenced by any anonymous communications to the Press and, with reference to the last sentence of the reply, has the Parliamentary Secretary anything to say as to the services of Mr. Gibson Jarvie, the Director of the Port?

Mr. Noel-Baker: I am very glad to assure Mr. White and the House that the setting up of this inquiry was in no way due to any anonymous letter or other communication to the press, and I am most grateful to Mr. White for giving me the opportunity of paying on behalf of the Government a very warm tribute to the work which Mr. Gibson Jarvie has done in Liverpool and to express to him the gratitude for the many services that he has rendered in keeping our supplies working in very great difficulties in a vitally important port.

Mr. D. G. Logan (Liverpool, Scotland—Lab.) asked if it was now possible for Members of Parliament for Liverpool and Merseyside to receive in secret the report of this important inquiry which sat in camera?

Mr. Noel-Baker said he would certainly consult the Minister of Transport on the suggestion.

Mr. E. Granville (Eye—Lib.) inquired if it was the intention of the Department to ask Mr. Gibson Jarvie to reconsider his decision to resign.

Mr. Noel-Baker said he would prefer not to answer that question.

Mr. Logan: Is the Parliamentary Secretary not aware that this respected officer, whose appointment was at first received adversely, has brought about a decent standard of conditions of the docks? Is it not worth while to reconsider the situation?

Mr. Noel-Baker: I hope that the tribute which I have given will be taken as expressing the feeling of the Government.

Uxbridge By-Pass Road

Mr. R. Purbrick (Liverpool, Walton—C.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport when he expected that the Uxbridge by-pass road would be open for public use; and why had its completion been so long delayed in view of the fact that other work for a further extension had been set in hand.

Mr. P. J. Noel-Baker, in a written reply, stated that it was expected that the road would be opened before the end of the year. The delay had been due to shortage of suitable labour required for the construction of the concrete viaduct.

L.P.T.B. Ticket Inspectors

Mr. T. E. Naylor (Southwark South-east—Lab.) on October 21 asked the Parliamentary Secretary to the Ministry of War Transport if he would state the number of ticket inspectors employed on the London Passenger Transport system, indicating separately those employed on the railways.

Mr. P. J. Noel-Baker, in a written answer, stated: The total number of staff employed by the London Passenger Transport Board on ticket inspecting is 478 and of this total 57 are engaged on the railways. This staff is not, however, exclusively engaged on this work.

Long-Distance Railway Travel

Sir Herbert Williams (South Croydon—C.), on October 22, asked the Parliamentary Secretary to the Ministry of War Transport whether his attention had been drawn to the fact that the congested travelling conditions in respect of long-distance railway travel arose mainly from the travelling on leave of Service men and women and of civilian workers directed to work away from home; and whether, in these circumstances he would represent to the Service Ministers and the Ministry of Labour the importance of posting as many persons as possible near to their own homes.

Mr. P. J. Noel-Baker, in a written reply, stated that his Department was constantly in touch with the Service Departments and the Ministry of Labour & National Service with the object of avoiding all unnecessary travel; but it would not be practicable or consistent with the needs of either operational or training requirements to insist that Service personnel must be stationed near their own homes. The needs of war industry must be paramount.

Mr. G. Griffiths (Hemsworth—Lab.), on October 22, asked the Parliamentary Secretary to the Ministry of War Transport whether, in view of the inconvenience caused to troops through the absence of any catering arrangements on long-distance trains and the fact that through those trains not running to time it was often impossible to obtain refreshments at station canteens, he would consider asking the Young Men's Christian Association and the Salvation Army to run canteens on those trains for the use of troops only.

Mr. P. J. Noel-Baker stated in a written answer that Mr. Griffiths' proposal would involve the re-introduction of restaurant or buffet cars. That would inevitably reduce the carrying capacity of the trains. He regretted that in view of the present restricted services and the increasingly heavy traffic which must be expected, he did not think it possible to adopt it. He would remind Mr. Griffiths, however, that Army and R.A.F. personnel who were travelling on leave or on duty, were given rations for their journeys, and special arrangements were made for the provision of meals for naval personnel travelling long distances on duty.

Staff and Labour Matters

Road Haulage Wages

At its meeting on October 14, 1942, the Road Haulage Central Wages Board agreed to ask the Minister of Labour & National Service to make an Order giving effect to the proposals of the board for the amendment of the existing Road Haulage Wages Order governing the statutory remuneration of road haulage workers falling within the scope of the board. This decision was reached after the board had considered the reports from the area wages boards on the proposals and the objections which had been lodged against the proposals.

The board's proposals are that the statutory remuneration for adult workers in the London Area, in grade 1 areas and on long distance services shall be increased by 2s. 6d. per week, in grade 2 areas by 3s. a week, in grade 3 areas by 3s. 6d. a week, and that increases of half these amounts shall apply in the case of junior workers to whom the adult rates do not apply. The board also proposes that the basic subsistence allowance of 7s. shall be increased to 9s., and that certain towns shall be up-graded for the purpose of the application of the statutory remuneration.

Electrical Contracting Industry

After consultation with representatives of the National Federated Electrical Association, the Electrical Contractors' Association of Scotland, and the Electrical Trades Union, and of both sides of the National Joint Industrial Council for the Electricity Supply Industry, the Minister of Labour & National Service has made an Order entitled the Essential Work (Electrical Contracting Industry) Order, 1942. The Order came into force on October 19, 1942.

Under the Order the Minister may schedule electrical contracting undertakings as defined in the Order in respect of specified classes or descriptions of workers. If an electricity supply undertaking maintains a branch or department wholly or mainly engaged on electrical contracting, that branch or department may also be scheduled but only to the extent that it engages in electrical contracting for persons who are not authorised electricity supply undertakers.

The Order includes provisions similar to those contained in other Essential Works Orders as to the right of discharge from and permission to leave a scheduled undertaking, the treatment of cases of absenteeism, lateness or indiscipline, the procedure for appeals to Local Appeals Boards, and the guarantee, subject to certain conditions, of a minimum wage.

The Order, however, differs in certain important respects from other Orders so as to maintain the essential mobility and flexibility of the industry as to which strong representations were made by both sides.

The Argentine Railway Fuel Problem

The difficult situation of the Argentine railways due to the steady aggravation of the fuel shortage has been the subject of a memorandum addressed to the Director-General of Railways by the Board of Railway Representatives & Managers. (See also THE RAILWAY GAZETTE of September 11, page 260.) After stating that the total fuel consumption in Argentina during 1941 amounted to the equivalent of 10,364,000 tons of petroleum, the note points out that there are only two courses open: (*a*) the speeding-up of the production of national mineral combustibles, and (*b*) the use of substitutes, along with the rationing of the consumption of the former due to the technical difficulties, in many instances, of using substitute materials.

IMPROVEMENT IN DISTRIBUTION

Of equal importance with augmented production is the rationalisation of distribution. The note stresses the important role which rail transport must play in any scheme for solving the fuel problem, as it is practically the only method by which heavy loads can be carried long distances. For example, the great log-fuel reserves of the Chaco territory would be practically useless without the facilities for their transportation to the centres of consumption. This region, which is served by the Province of Santa Fé Railways, is ideal for red *quebracho* logging, the class of wood which is the best available substitute for mineral fuel for the railways and for industry in general. The forests are close enough to the centres of consumption to make them conveniently workable, and the P.S.F. has a surplus of rolling stock and haulage equipment which could be used as the means of contributing to the increased output of log fuel. But even the transport capacity of the railways is limited, and the problems created by the fuel shortage are accentuated by the lack of maintenance materials and spare parts, including such essential elements as wheel tyres and boiler tubes. These are becoming scarce, due to the difficulty of obtaining certain metals from Europe, and supplies which have been obtainable hitherto from the United States soon may be cut off entirely.

RECOMMENDATIONS

The note states that, unless the problem of fuel supply and distribution is solved speedily, certain railway services may have to be suspended for lack of fuel of any kind. Some trains already have been taken off, and any further shrinkage in the fuel supply would necessitate the railways having recourse to measures such as those enumerated below, with resulting inconvenience to the travelling public:—

(1) Partial or total suspension of all unnecessary trains, or of those carrying a negligible amount of traffic, on routes where alternative transport facilities exist.
(2) Ordinary trains to run strictly according to timetable without any obligation on the part of the railways to add special trains on rush occasions.
(3) Obtaining of better haulage yield of oil- or coal-fired steam trains by increasing to 86 bogies the maximum limit fixed by article 25 of the general regulations.
(4) Substitution of night trains by day services, with resulting increase in seating capacity.
(5) Reduction of minimum average speed for mixed trains (article 58 of the regulations) to 20 km.p.h., to enable them to haul more wagons and heavier loads.
(6) Total or partial suspension of the order requiring heating to be supplied on passenger or mixed trains. (This was requested by the railways in a note dated May 29, 1942).

Suggestions made by the companies with regard to better utilisation of rolling stock include the suppression of unnecessary transport; rational use of junctions and inter-railway exchange of rolling stock; combinations of rail and water transport; better utilisation of locomotives, and elimination of premature overhauls and other factors which keep the engines idle in the workshops. Quicker turns-round at points of departure or destination, by the elimination of negligence or unnecessary delay on the part of shippers or consignees, should be insisted upon, so as to obtain the greatest possible transport yield and efficiency from rolling stock.

CHANGES IN THE REGULATIONS

The note further requests that the obligations imposed upon the companies of adhering, under pain of certain penalties, to the strict letter of the general regulations be relaxed, and the rules modified, at any rate for the duration of the present crisis, by express recognition by Government decree of the situation of *force majeure* and suspension of the obligation to effect transport within stipulated time limits. Should this action be deemed too drastic, the changes in the general regulations suggested hereunder would seem to be justifiable:—

(*a*) Amplification of tolerances (the permissible margins of delay) conceded by article 61 for transport of passengers, luggage, and parcels, with total exemption from responsibility for delays, provided deliveries are effected within the limits of the extended tolerances.

(*b*) An increase of 25 per cent. in the time limit stated in Government Decree No. 113,076 of February 13, 1942, relating to transport under articles 247 and 366.

(*c*) Six hours' extension on the times of two and four hours conceded by articles 247 and 367 for delivery at destination and re-loading at junctions.

(*d*) Total exemption from responsibility for loss caused by the duration of the journey, provided the latter is kept within the extended time limits.

(*e*) Transport under article 253 should be allowed a 50 per cent. extension on first-category lines and 100 per cent. on those for second category, with total exemption from responsibility for losses caused by the duration of the journey, provided the latter is effected within the extended time limits.

NEED FOR PROMPT ACTION

The note concludes with the observation that the picture drawn of the situation of the railway companies, although gloomy, is in no way exaggerated. The existing reserves of fuel have declined to alarmingly low levels and consumption continues to be greatly in excess of supply. It is imperative therefore that the problem be promptly and vigorously tackled if serious consequences, affecting not only the railways but other forms of transport and industry in general, are to be averted.

The Institute of Transport

The annual general meeting of corporate members of the Institute of Transport is to be held on Tuesday, December 1, at 2.45 p.m., at the Connaught Rooms, Great Queen Street, W.C.2. Luncheons and addresses will be held also at the Connaught Rooms on the following Tuesdays: November 3, when the Rt. Hon. Lord Leathers, Minister of War Transport, will speak, on the occasion of his acceptance of election as an Honorary Member; December 1, when the Hon. W. L. Runciman, A.F.C., Director-General, British Overseas Airways Corporation, will speak.

Lunch-hour informal meetings will be held on Tuesdays at 1.15 p.m. at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2, as follows: November 24—Mr. G. Mills, on "Town and Country Planning and Transport Problems"; and on the following dates in 1943: January 19—Mr. A. B. B. Valentine, on "Passenger-Fares—Economics or Tradition?"; February 23—Mr. R. Kelso, on "Transport between the United Kingdom and the Continent"; and March 23—Mr. C. E. W. Duley, on "The Adaptation of Wartime Air Transport to Post-War Needs."

Meetings of the Metropolitan Graduate & Student Society also will take place at the Institution of Electrical Engineers on the following Saturdays at 2.15 p.m.: November 21—Mr. J. E. Cowderoy, on "Public Co-operation in Transport"; December 12—"Any Questions?"—meeting with a Brains Trust; and, in 1943, February 13—Mr. A. L. Castleman, on "The Operation of Railway Goods Traffic in London"; and March 13—Mr. C. F. King, on "Conditions of Service in the Goods Road-Transport Industry."

Boilers—Past and Present

(*Concluded from page* 417)

culties of the Ministry of Fuel & Power and the difficulties of giving consumers the type of fuel they normally used. Nevertheless, a number of people connected with power stations felt that more consideration should be given to the production and transportation of better and cleaner fuels from the mines to the power stations which, in the speaker's opinion, were the most important consumers of fuel in the country. In addition to the transport and handling of the ash, the fuel quality affected the number of heat units obtained per lb. of coal, and showed the loss of power generated per ton of inferior coal used. The time had been reached when coals should be nationally classified with regard to size, volatile matter, and ash content. The different grades of size (peas, beans, etc.) could vary in different parts of the country. If a standard classification could be adopted, boiler-makers would then be better able to design plants which would be suitable for the particular class of coal to be burnt.

It would appear that too little attention had been given to the necessity for a suitable and efficient maintenance staff in the boiler house, for it was in the boiler house that the greatest saving could be made. In many cases a considerable amount of money was spent on instruments, and afterwards these instruments did not receive the necessary maintenance to obtain from them their full value, for which they had been installed. In addition to instruments, there were many other parts of the plant requiring proper maintenance to secure availability.

Notes and News

Callender's Cable & Construction Co. Ltd.—The interim ordinary dividend is being maintained at 5 per cent. less tax.

Rhondda Transport Co. Ltd.—An interim dividend of 2½ per cent., tax free, against 3 per cent., tax free, is to be paid on November 12.

North Western of Uruguay Railway Co. Ltd.—Gross receipts for August were £3,921, an increase of £550 on last year, and aggregate receipts of £9,821 were £3,003 higher than for 1941.

John Holroyd & Co. Ltd. — The London office of this firm, under the control of Mr. Vincent Gartside, M.B.E., M.I.Mech.E., has been moved to 10, Princes Street, Westminster, S.W.1.

Buenos Ayres Western Railway Limited.—The directors have resolved that payment of one half-year's interest to June 30, 1942, less income tax at 10s. in the £, be made on November 26 on the 4 per cent. and 5 per cent. debenture stocks of the company.

Engineering Vacancies in India.—A gentleman with experience of India is required to act as General Manager in that country of an engineering firm handling several agencies. Particulars in respect of application are given in our Official Notices at page 431.

Entre Rios Railways Co. Ltd.—The company is paying on November 16 a further six months' arrears of interest on the 4 per cent. debenture stock to September 30, 1939, together with 5 per cent. per annum interest on arrears, making a total of £2 6s. 3d. per cent. less tax. Similar payments were made on May 16 and September 1.

R. & W. Hawthorn Leslie & Co. Ltd.—Accounts for the year to June 30 last show a net balance of £130,934 (£132,271) after providing for taxation, depreciation, contingencies, and directors' fees. The final ordinary dividend is again 7 per cent., less tax, and the bonus of 5 per cent., less tax, is repeated, making a total distribution of 15 per cent., less tax, for the year (same). A transfer of £50,000 (same) is made to reserve, and the amount to be carried forward is £53,148 (£52,826).

Skefko Ball Bearing Co. Ltd.—This company announces an interim dividend of 4d. a share (6⅔ per cent.), tax free, in respect of 1942, payable November 10. This is the same as a year ago.

The Dorada Railway (Ropeway Extension) Limited.—Receipts for September were £4,520 or £2,980 higher than in August, 1941, and the aggregate receipts from January 1 were £33,221, an increase of £11,481 on last year.

L.M.S.R. Mobile Salvage-Exhibition Coach.—Fifty thousand people so far have visited the L.M.S.R. salvage-exhibition coach, which is making a 10,000-mile tour and is at present in the North Midlands. It has already visited 33 towns. The coach was described and illustrated in our July 3 issue.

Great Western of Brazil Railway Co. Ltd.—Payment is announced for November 3 of 3 per cent. interest on the 6 per cent. permanent debenture stock and of 2 per cent. interest on the 4 per cent. debentures in respect of the half-year ended June 30, 1940. Similar payments on these stocks for the half-year to December 31, 1939, were made on August 8 last.

Coal for Steam-Raising.—A paper on this subject will be presented by Mr. J. N. Waite at a joint meeting of the Institution of Electrical Engineers and the Institution of Mechanical Engineers, to which members of the Institute of Fuel have been invited, at 5.30 p.m. on November 5 in the Lecture Theatre of the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, W.C.2.

Restrictions on Mechanical-Engineering Production in Germany.—The German central authority controlling mechanical-engineering production has imposed heavy restrictions on the manufacture, both for home use or export, of numerous types of fittings, especially steam-pipe fittings, such as valves, stopcocks, pipe sections, flanges, joint fittings, and similar items. Priority is being accorded to equipment necessary to maintain pipe-lines and runs in districts especially liable to air-raid damage. The construction of any locomotive using an internal-combustion engine has been prohibited, except in special circumstances. Spare parts may be provided under an essentiality certificate; and in a few cases locomotives may be built for export, presumably where this will enable something valuable to be received in return. If the use of an internal-combustion locomotive is considered necessary for military reasons, or may otherwise be specially advantageous, as in certain mines, a permit may be granted. Manufacturers may finish the construction of certain locomotives, on which a large amount of work has been done. Another order prohibits all unnecessary finishing on machine tools or other

The Rt. Hon. Lord Ashfield, Chairman, London Passenger Transport Board, inspecting a model in the "Gangway, Please" exhibition with Mr. P. J. Noel-Baker, M.P., Joint Parliamentary Secretary, Ministry of War Transport, after the opening by the latter on October 16. Reference to the exhibition was made in our issue of last week

British and Irish Railway Stocks and Shares

Stocks	Highest 1941	Lowest 1941	Prices Oct. 23, 1942	Prices Rise/Fall
G.W.R.				
Cons. Ord.	43⅜	30⅜	54½	+ 1
5% Con. Pref.	109½	83½	110	+ 1
5% Red. Pref. (1950)	105½	96½	105	—
5% Rt. Charge	129½	116	126½	—
5% Cons. Guar	128	110½	124½	+ ½
4% Deb.	113½	102½	112	+ 1½
4½% Deb.	115	105⅝	112½	+ 1
4½% Deb.	121½	112	116½	—
5% Deb.	132	122	128½	—
2½ Deb.	70	62⅜	75½	—
L.M.S.R.				
Ord.	17½	11	25½	—
4% Pref. (1923)	53	33½	60½	+ 1
4% Pref.	68½	48½	75	+ 1
5% Red. Pref. (1955)	97¼	77	100½	+ 1
4% Guar.	100	85¼	100½	+ ½
4% Deb.	105¾	97	106	+ 1½
5% Red. Deb. (1952)	110½	106½	109½	—
L.N.E.R.				
5% Pref. Ord.	3¾	2⅜	7	+ ½
Def. Ord.	2	1½	3½	—
4% First Pref.	52½	33	59½	+ 1
4% Second Pref.	19⅜	10	29½	+ 1
5% Red. Pref. (1955)	79½	52	92½	+ 1
4% First Guar.	90½	74½	95	+ ½
4% Second Guar.	80½	59	86½	+ ½
3% Deb.	79½	68¾	80½	+ 1
4% Deb.	104	91½	104½	+ 1
5% Red. Deb. (1947)	106	102½	103½	—
4½% Sinking Fund Red. Deb.	103½	99 11/16	103½	—
SOUTHERN				
Pref. Ord.	65½	43½	75	+ 2
Def. Ord.	15⅝	9	22	+ ½
5% Pref.	107	77½	107½	—
5% Red. Pref. (1964)	107	89½	108	+ ½
5% Guar. Pref.	128	111	124½	—
5% Red. Guar. Pref. (1957)	114¾	107½	110½	—
4% Deb.	112	102½	109½	—
5% Deb.	130½	119	128½	—
4% Red. Deb. (1962–67)	108½	102	110	+ ½
4% Red. Deb. (1970–80)	108½	102½	108½	+ 1
FORTH BRIDGE				
4% Deb.	99½	90½	107	—
4% Guar.	99	85½	103½	—
L.P.T.B.				
4½% "A"	120 13/16	109½	116½	—
5% "A"	130½	115½	124½	—
4½% "T.F.A."	103½	99½	101	—
5% "B"	117	102	115½	—
"C"	46½	28½	51½	—
MERSEY				
Ord.	24½	19½	25½	+ 1½
3% Perp. Pref.	58	51½	59	—
4% Perp. Deb.	100	90	100	—
3% Perp. Deb.	73½	63	78	—
IRELAND				
BELFAST & C.D.				
Ord.	4	4	9	—
G. NORTHERN				
Ord.	14½	3	29	+ 1
G. SOUTHERN				
Ord.	14½	5	23	+ 3
Pref.	17	10	25	+ 1½
Guar.	44	16	49½	+ 1½
Deb.	61	42	69	+ ½

OFFICIAL NOTICES

OFFICIAL ADVERTISEMENTS intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is 9.30 a.m. on the preceding Monday. All advertisements should be addressed to :—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

REQUIRED, Gentleman to act as General Manager in India for engineering firm handling several agencies. Must have Indian experience.—Apply Box No. 2310, c/o *The Railway Gazette*, 33, Tothill Street, Westminster, S.W.1.

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essential products. In many directions the manufacture of articles is being limited methodically to a few war-standard designs; such is the case with various forms of cranes, and with electric lamps.

Società Anonima Locazione Vagoni, Imprese Ferroviarie e Tramviarie, of Milan.—This wagon-hiring concern returned a net profit for 1941 of 1,024,449 lire, in addition to a profit balance from 1940 totalling 319,878 lire. The company's share capital is 6,000,000 lire, of which 3,900,000 lire is paid up.

Società Anonima Ferrovia Suzzara-Ferrara, of Milan.—This company, owning and operating the 62-mile standard-gauge Suzzara-Ferrara line, returned a net profit for 1941 amounting to 343,272 lire, in addition to a profit balance from 1940 of 17,047 lire. The company's share capital is 4,373,000 lire.

Società Anonima per le Ferrovie dell'Alta Valtellina, of Milan.—This company, owning and working the 16-mile electric railway between Sondrio and Tirano, in the Alpine region to the north of Milan, returned a net profit for 1941 amounting to 137,299 lire, in addition to a profit balance of 4,567 lire. The company's share capital is 3,000,000 lire.

Paper Economy Committee.—A Paper Economy Committee has been appointed by the Minister of Production to assist him in obtaining a reduction in the consumption of paper. It consists of Mr. L. W. Farrow, Chartered Accountant (Chairman); Mr. H. C. Tingay, Managing Director, George Newnes Limited; and Mr. B. C. Westall, Managing Director of Thomas De La Rue & Co. Ltd. The address of the committee is 3, Central Buildings, Westminster, S.W.1.

Canadian National Railways.—Gross earnings during September last were $33,860,000, an increase of $6,727,847 over September, 1941, and operating expenses were $25,027,701, an advance of $4,288,620, leaving net earnings $2,439,226 higher, at $8,832,298. Aggregate gross earnings for the nine months from January 1, 1942, were $270,827,000, an increase of $50,514,989, as compared with the similar period of 1941, and net earnings of $62,760,974 showed an improvement of $14,171,648.

Egyptian Delta Light Railways Limited.—Gross receipts in the year ended March 31, 1942, were £352,005 (£248,457) and working expenses £262,608 (£214,024), giving an operating ratio of 74·60 per cent. against 86·26 per cent. The balance carried to net revenue account is £89,397 (£34,133), which, with interest, and dividends, etc., received from subsidiary companies, gives a total of £93,439. After providing for interest on debentures and for all fixed charges, there is a balance of £7,898, to which must be added £31,182 brought forward, making a total of £46,080 which is being carried forward. Coaching receipts rose from £140,642 to £197,792, and goods traffic receipts from £104,037 to £147,272, aided by increased tariffs. Otherwise, goods receipts would have been lower. Working expenses included £30,000 provision for deferred renewals and replacements.

Jugoslav Exhibition in London.—An exhibition of Jugoslav arts was opened on October 21 at the Berkeley Street office of Thomas Cook & Son Ltd. Among those present were Mr. E. Huskisson, Managing Director of the company; Dr. Krek, Deputy Prime Minister of Jugoslavia; Dr. Kuhar, Jugoslav Minister with the Polish Government; Sir Charles Hambro, Chairman, Great Western Railway Company; Sir James Milne, General Manager, Great Western Railway; Mr. E. J. Missenden, General Manager, Southern Railway; and Mr. J. A. Kay, Editor, THE RAILWAY GAZETTE. The hope was expressed that after the war the firm of Thomas Cook & Son Ltd. would be the medium of many exchanges of visits between this country and Jugoslavia.

Transport Goes to War.—A booklet bearing this name, giving the official story of British transport from 1939-42, has been issued for the Ministry of War Transport by the Ministry of Information. It shows a vivid picture of what must have appeared to the layman almost-insuperable difficulties, and of the way in which these have been overcome by the railwaymen, road-transport workers, and docks and canal personnel. Some excellent illustrations are given of some of the damage inflicted during air raids and of the repairs which have been carried out, of the weather conditions which presented so much difficulty to the transport services, and of many phases of activity, particularly during the blackout and while enemy attacks were in progress; there is also much interesting descriptive text. The booklet is published by His Majesty's Stationery Office at 1s. net.

Simmonds Aerocessories Limited.—Registration has been granted to this firm of the trade mark "Simmonds" in connection with self-locking nuts.

Cost-of-Living Index.—On October 1, as on September 1, the official cost-of-living index figure was 100 points above the level of July, 1914.

Visit of Brazilian Editors to Southern Railway.—Recently Colonel Eric Gore-Browne, Deputy-Chairman, Southern Railway Company, and Mr. E. J. Missenden, General Manager, with other Southern Railway officials, met the Brazilian editors who are at present in this country. The editors visited Waterloo signal box and Feltham marshalling yard, in order to see railway operation near London.

Trans-Canada Air Lines.—Airmail and express traffic handled by Trans-Canada Air Lines showed a further increase during July, compared with the previous month. The amount of airmail conveyed amounted to 192,971 lb., an increase of 18,867 lb. over the figure for June, and of 63,728 lb. over that for July, 1941. The amount carried between New York and Toronto was nearly double that handled in the preceding month. Express traffic, composed largely of priority consignments, was greater than that conveyed in June by 4,342 lb., and attained a record figure of 33,323 lb. Passenger traffic declined from 10,317 in June to 9,440 in July. The average length of passenger journeys in July was 555 miles, compared with 525 miles in June, and with 504 miles in July, 1941. Passenger, airmail and express traffic on the wartime Newfoundland service remained at a high level.

Mr. E. E. Young, London District Freight Superintendent, Southern Railway, and some of the 404 motor-vehicle drivers and carters at Bricklayers Arms to whom he presented recently awards for safe driving. The Agents at Bricklayers Arms and Nine Elms are included in the group

Railway Stock Market

There has been a buoyant trend in Stock Exchange markets, where sentiment was aided by indications of a renewed increase in demand and by the weight of money seeking investment. Recent gains have been followed by relatively little profit-taking. In fact, in many directions it would appear that, due to the continued shortage of stock in the market, prices are likely to show further good response to any renewed increase in demand. The strength of home railway securities remained a prominent feature. Yield considerations continued to stimulate buying, as has also the increasing belief that the railways and their stockholders will be accorded equitable treatment in any vital developments affecting their interests that may be proposed after the war. Chief attention again centred on the junior securities in view of the large yields still obtainable; moreover, it is widely recognised that dividends at around last year's rates can be considered as virtually guaranteed by the rental agreement. It is, therefore, hardly surprising that now markets have become more active, the double attraction of good yields and income stability during the war, have resulted in widespread demand for these stocks. It is, of course, realised that from time to time profit-taking must be expected to develop, and that adverse war news might affect markets. Nevertheless, the assumption is that between now and the turn of the year the general trend of values is likely to continue upwards, and that the scope for appreciation in home railway junior issues is probably as large, if not larger, than in any other section of the Stock Exchange. Further improvement in demand has by no means centred on the junior stocks. In fact, on balance, the largest gains have been recorded by various of the senior preference and guaranteed stocks at the time of writing; it is recognised that yields are not unattractive, when compared with the return on other securities with similar investment merits. Moreover, further small gains have been recorded among debenture stocks. South American railway securities have also been more active, and have shown a fairly general improvement in values which has extended from ordinary stocks to the debentures. The statement of Sir Follett Holt, Chairman of the Entre Rios Railways Company, emphasised the difficulties under which the British-owned railways are operating in the Argentine; but the market is still hopeful that, at long last, they will receive sympathetic treatment from the authorities as to exchange and other matters.

As compared with a week ago, Great Western ordinary eased from 54¼ to 54; the 5 per cent. preference was a point better at 110, and the guaranteed stock slightly higher at 124½. L.M.S.R. ordinary at 25⅛ was moderately lower on balance, but at 74½ the senior preference gained half-a-point, as did the guaranteed stock at 100, and the 1923 preference was a point better at 60½. L.M.S.R. 4 per cent. debentures were higher at 106. Further gains were shown in L.N.E.R. guaranteeds, the firsts being 95, compared with 94½ a week ago, and the seconds 87, compared with 86. Moreover, this railway's first preference showed a fractional gain to 59½, as did the second preference at 29¼. Among Southern stocks, the preferred, which continued to be favoured on yield considerations, has further improved from 73½ to 73¾ at the time of writing; the deferred was 21½, compared with 21⅜ a week ago; the 5 per cent. preference 108, compared with 107½; and the guaranteed stock was higher at 124½. London Transport "C" was again in demand; sentiment was influenced by the scope for better dividends after the war, and has further improved from 53 to 54⅜. Other L.P.T.B. stocks were better; the 5 per cent. "B" was 117, compared with 116¾ a week ago.

Among Argentine railway issues, improvement was widely spread, and good demand was reported for B.A. Western stocks. Elsewhere, United of Havana debentures again advanced, from 30 to 34½, and Leopoldina debentures were 52½. Canadian Pacifics improved.

Traffic Table and Stock Prices of Overseas and Foreign Railways

	Railways	Miles open 1941-42	Week Ending	Traffic for Week: Total this year	Traffic for Week: Inc. or Dec. compared with 1941	No. of Weeks	Aggregate Traffics to date: Totals: This Year	Aggregate Traffics to date: Totals: Last Year	Aggregate Traffics to date: Increase or Decrease	Shares or Stock	Prices: Highest 1941	Prices: Lowest 1941	Prices: Oct. 23, 1942	Prices: Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	18.10.42	£ 19,170	— £ 3,030	42	£ 887,240	£ 811,190	+ £ 76,050	Ord. Stk.	10⅜	3⅛	12½	Nil
	Argentine North Eastern	753	17.10.42	13,812	+ 1,782	16	215,274	193,956	+ 21,318	,,	4	1	6	Nil
	Bolivar	174	Sept., 1942	5,518	+ 1,381	40	40,709	34,854	+ 5,855	6 p.c. Deb.	5	5	16½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds	8	2⅛	18	Nil
	Buenos Ayres & Pacific	2,807	17.10.42	87,000	+ 12,000	16	1,355,340	1,222,200	+ 133,140	Ord. Stk.	7⅜	1½	6¾	Nil
	Buenos Ayres Great Southern	5,080	17.10.42	150,360	+ 29,460	16	2,052,240	1,996,320	+ 55,920	Ord. Stk.	10⅜	3½	11	Nil
	Buenos Ayres Western	1,930	17.10.42	52,200	— 2,520	16	774,600	775,320	— 720	,,	9	2½	10½	Nil
	Central Argentine	3,700	17.10.42	119,538	— 8,244	16	1,931,157	1,755,972	+ 175,185	,,	8½	2½	8½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9½	½	3¼	Nil
	Cent. Uruguay of M. Video	972	17.10.42	21,662	— 1,216	16	323,763	349,666	— 25,903	Ord. Stk.	9½	1	6½	Nil
	Costa Rica	262	Sept., 1942	11,556	— 9,881	9	38,244	68,996	— 30,752	Stk.	15⅛	11½	15	Nil
	Dorada	70	Sept., 1942	19,300	+ 7,300	40	137,705	112,750	+ 24,955	1 Mt. Db.	97	97	88½	6½
	Entre Rios	808	17.10.42	18,966	+ 3,228	16	288,468	284,604	+ 3,864	Ord. Stk.	6½	⅛	1⅜	Nil
	Great Western of Brazil	1,030	17.10.42	16,700	+ 2,200	42	436,400	384,600	+ 51,800	Ord. Sh.	11/-	1/-	26/6	Nil
	International of Cl. Amer.	794	Aug., 1942	$298,195	— $106,623	34	$4,308,750	$3,889,669	+ $419,081	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	⅜	6d.	1½	Nil
	La Guaira & Caracas	22¼	Sept., 1942	8,590	+ 2,410	40	63,355	58,005	+ 5,350	—	—	—	—	—
	Leopoldina	1,918	17.10.42	31,119	+ 1,333	42	1,263,515	1,095,808	+ 167,702	Ord. Stk.	4	½	6	Nil
	Mexican	483	14.10.42	ps. 271,100	— ps. 9,000	16	ps. 4,286,400	ps. 4,630,800	— ps. 344,400	,,	⅜	¼	½	Nil
	Midland of Uruguay	319	Aug., 1942	10,196	— 2,774	9	22,810	27,480	— 4,670	—	—	—	—	—
	Nitrate	382	15.10.42	10,776	+ 3,047	27	150,871	115,030	+ 35,841	Ord. Sh.	66/-	1½	72/6	3⅞
	Paraguay Central	274	16.10.42	$4,359,000	+ $1,120,000	16	$58,868,000	$53,600,000	+ $5,268,000	Pr. Li. Stk.	43	29	51½	11⅜
	Peruvian Corporation	1,059	Sept., 1942	85,636	+ 4,091	14	251,242	218,753	+ 32,489	Pref.	6½	1⅛	14½	Nil
	Salvador	100	Aug., 1942	£ 49,000	+ £ 1,907	9	c 128,000	c 111,172	+ £ 16,828	—	—	—	—	—
	San Paulo	153½	11.10.42	35,367	— 1,570	41	1,493,563	1,516,649	— 23,086	Ord. Stk.	52	24½	58	3⅜
	Taltal	160	Sept., 1942	4,935	— 2,290	12	16,660	16,390	+ 270	Ord. Sh.	1	6/-	1⅜	Nil
	United of Havana	1,346	17.10.42	39,105	+ 17,225	16	628,470	305,731	+ 322,739	Ord. Stk.	2½	⅜	6½	Nil
	Uruguay Northern	73	Aug., 1942	1,072	— 262	9	2,214	2,690	— 476	—	—	—	—	—
Canada	Canadian Pacific	17,049	14.10.42	1,043,600	+ 73,400	41	39,454,200	33,491,400	+ 5,962,800	Ord. Stk.	13-⅞	7⅛	15	Nil
India†	Barsi Light	202	July, 1942	23,685	+ 8,903	17	63,285	67,635	— 4,350	—	—	—	—	—
	Bengal & North Western	2,090	July, 1942	261,600	— 5,267	18	1,080,300	1,092,128	— 11,828	Ord. Stk.	345	253	354½	5⅛
	Bengal-Nagpur	3,267	20.6.42	284,100	+ 31,301	11	2,271,525	2,107,876	+ 163,649	,,	101	95⅜	98	4⅛
	Madras & Southern Mahratta	2,939	31.7.42	341,625	+ 133,549	18	2,714,939	2,473,086	+ 241,853	,,	105-⅞	101½	100	7½
	Rohilkund & Kumaon	571	Sept., 1942	50,850	+ 6,416	27	352,317	367,725	— 15,408	,,	342	290	354½	4½
	South Indian	2,402	20.6.42	179,171	+ 43,616	12	1,376,295	1,113,057	+ 263,238	,,	100	87	99	4½
Various	Beira	204	Aug., 1942	82,089	—	48	825,692	—	—	—	—	—	—	—
	Egyptian Delta	607	20.8.42	11,951	+ 4,299	22	150,997	97,636	+ 53,361	Prf. Sh.	1⅛	29/-	5⅛	Nil
	Manila	—	—	—	—	—	—	—	—	B. Deb.	68	45	37½	9½
	Midland of W. Australia	277	Aug., 1942	28,739	+ 8,731	4	56,608	38,657	+ 7,951	Inc. Deb.	90½	86½	89½	6
	Nigerian	1,900	25.7.42	70,391	+ 19,240	18	924,271	910,397	+ 13,914	—	—	—	—	—
	Rhodesia	2,442	Aug., 1942	540,350	—	48	5,371,799	—	—	—	—	—	—	—
	South Africa	13,291	12.9.42	843,951	+ 46,083	26	18,510,219	17,603,801	+ 906,418	—	—	—	—	—
	Victoria	4,774	May, 1942	1,364,694	+ 386,440	48	—	—	—	—	—	—	—	—

Note. Yields are based on the approximate current prices and are within a fraction of ⅛
† Receipts are calculated @ 1s. 6d. to the rupee
Argentine traffics are given in sterling calculated @ 16⅜ pesos to the £
§ ex dividend